JANUARY 1942

THE AMERICAN RIFLEMAN

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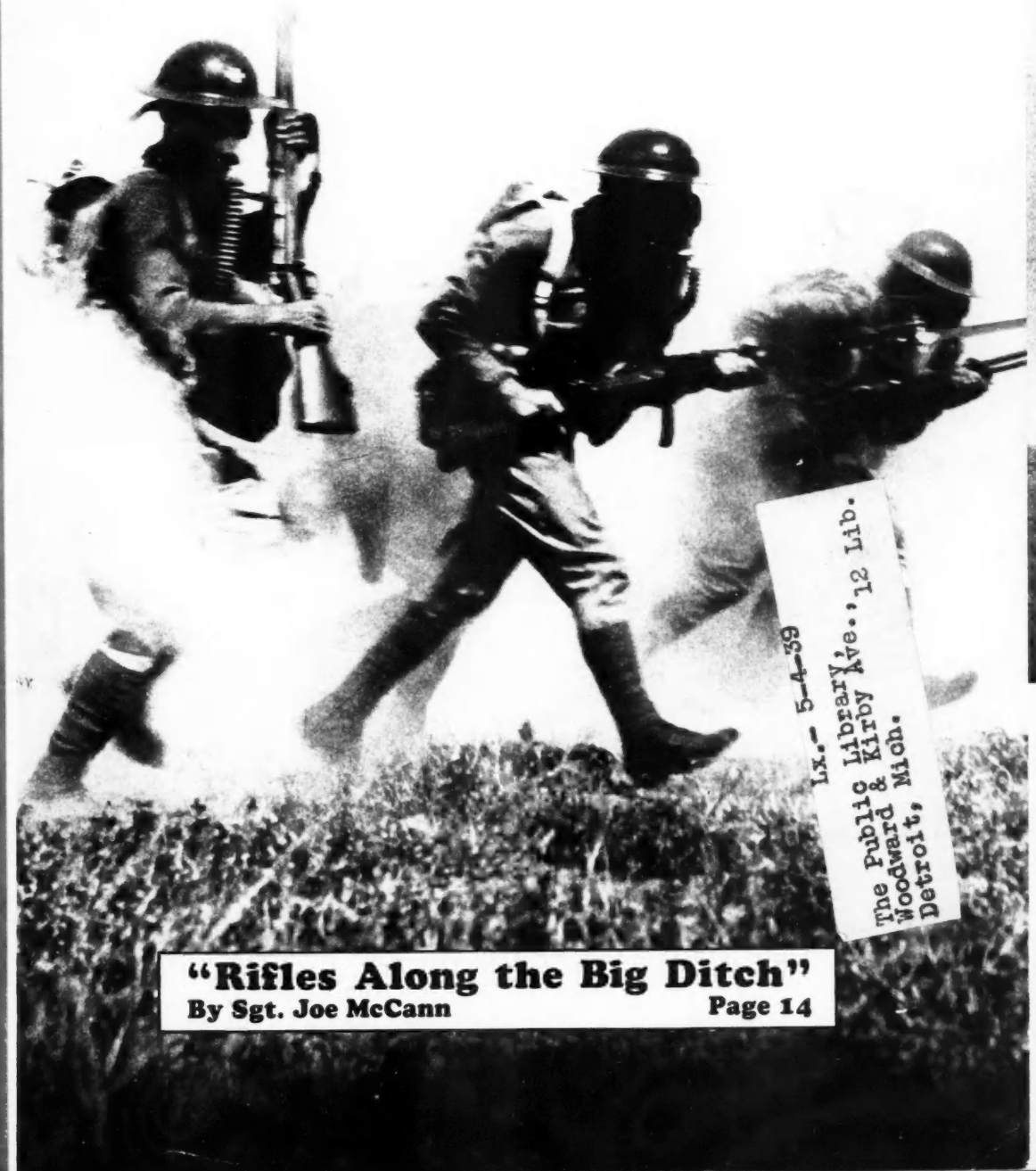
"MEN AT WORK"
The U. S. rifleman and modern warfare



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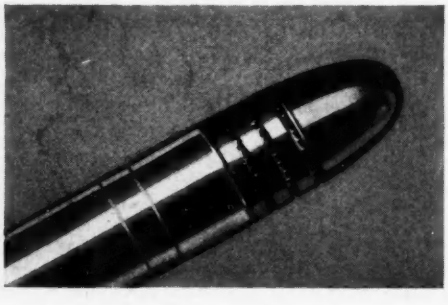
"Rifles Along the Big Ditch"
By Sgt. Joe McCann **Page 14**

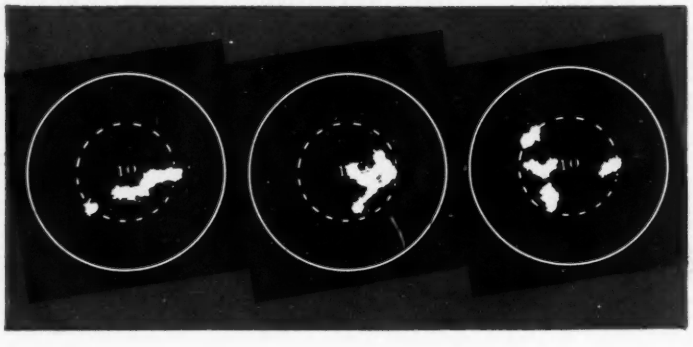
R v.30 1992

A Sight for a Shooter's Eyes

1 FIRST, YOU GET DOWN ON THE LINE with the rest of your relay, in plenty of time. That's so you won't be out of breath, and can have everything set up just right. You crawl into your sling, settle comfortably into position, and then . . .



2 YOU GUESSED IT—Peters cartridges. They can be either Police Match—the cartridge designed originally for pistol and revolver shooting, now proved to be sensationally accurate in small-bore rifles—or Dewar Match. The latter is a truly modern .22 long rifle cartridge, built to well-known Peters higher accuracy specifications for tournament shooting. Both have Rustless priming. But most important . . .



3 YOU GET TIGHT GROUPS because, first, you held steady as a rock and squeezed each shot off with a prayer; and second, the Police Match or Dewar Match cartridges you used have everything built into them that makes "possibles" possible. There's no doubt about it—the tight groups you get with Peters ammunition are truly "a sight for a shooter's eyes!"

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WITH you, as with us, *defense comes first*. Our output of optical instruments is being rapidly increased to meet the defense emergency. We will endeavor to give our customers the best service possible under existing circumstances, and ask your sympathetic cooperation.

Heritage From Saratoga

OF all they faced that day at Saratoga, Burgoyne's Redcoats remembered longest the withering accuracy of Morgan's Virginia riflemen. So it was at the Cowpens. Later, at New Orleans, the deadliness of Kentucky sharpshooters moved Napoleon himself, when he heard of it, to write that it had changed the face of war. And all down the years through the Argonne, America's opponents learned a healthy respect for the armies of a nation of riflemen.

That skill was no accident. The colonists shot for prizes. The pioneers practiced for their lives. Generation after generation, Americans grew up with the rifle. "Shooting at a mark" for sport has been a great foundation of American readiness for defense.

Today, on hundreds of ranges across the nation, shooters strive to attain the skill that groups shots in a smaller and smaller circle. At their matches, you'll see a predominant use of Bausch & Lomb products. Ray-Ban Shooting Glasses, the safe, scientific glare protection. Spotting Scopes, with which the shooter spots his shots and dopes wind conditions and "mirage."

And the marksmanship that makes American naval gunners the most accurate in the world is due in no small measure to the excellence of optical gunfire control equipment—range finders, binoculars, aerial height finders—produced by Bausch & Lomb.

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YOUR LAST CHANCE

1

2

POPULAR acceptance of this big 3-way bargain compels us to extend the offer another month. But it positively will expire January 31, 1942.

So, if you forgot—or were forgotten—here is a last chance to join or rejoin the N. R. A. and receive a year of *Field and Stream* plus a 12-month subscription to *The American Rifleman—all* for only $3.50 (foreign $4.50).

For the shooter-sportsman it's the outstanding value of the year. And this year more than ever before the nation's gun-owning citizens need the leadership, need the services of America's oldest, most practical patriotic organization! The offer is open to subscribers of both magazines as well as to new members. Just indicate your status on the coupon below and mail it with remittance of $3.50 before January 1, 1942. Tell your friends about this offer!

3

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Yes—I accept your triple-value offer of N. R. A. Membership ***plus*** a subscription to THE AMERICAN RIFLEMAN and FIELD AND STREAM—all for one year, for which I inclose remittance of $3.50 (outside of U. S. $4.50).

☐ Check here and inclose $3.00 if you wish N. R. A. membership only.

I pledge allegiance to the Flag of the United States of America and to the Republic for which it stands.

I certify that I am a citizen of the United States and that I am not a member of any organization or group pledged to, or working for, a program aimed at the destruction of our present system of government as established by the Constitution of the United States.

Applicant..... Age.....
(Signature)

Address..... Occupation.....

City..... State.....

Check one for N. R. A.

☐ NEW MEMBER
☐ RENEWAL

o o o

Check one for F. & S.

☐ NEW SUBSCRIBER
☐ RENEWAL

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I am glad to recommend this applicant whom I know to be a reputable U. S. citizen.

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CITY..... STATE.....

The AMERICAN RIFLEMAN

Official Journal of The National Rifle Association of America

THE COVER: War is nasty business. But now for every American it is the only important business, nevertheless. And in this all-out national effort, the American rifleman, the doughboy snatched from the ordinary pursuits of civilian life for a totally different role as a *unit*, in himself, of military might, represents the wholesale change which must take place in the life of every individual for the duration. This transformation for three of these *units* is pictured on our cover. (U. S. Army Signal Corps photo.) Their part in successfully terminating this war now brought upon us is portrayed by Major R. C. Andrews in our lead article, "Men at Work." Discounting no longer the place of the rifle in well-trained hands in these days of aerial and mechanized warfare, even the defense of the vital Panama Canal may be put squarely up to those "Rifles Along the Big Ditch" about which Sgt. Joe McCann writes on page 14.

Frank Parsons, Jr., author of our new three-part instruction series on "Position Shooting," starting this issue, is well qualified on the subject. While a student at George Washington University he proved the mainstay of a team winning three successive national championships, 1926-28. In 1930 he was a member of the American team entered in the International Matches at Antwerp, Belgium, the team that brought back to America the Free Rifle Championship. Coaching the G. W. rifle team since that time, his charges have established one of the finest records, with the possible exception of U. S. Naval Academy, of any collegiate team in the annual National Championships, including a first place in 1938.

Monroe Goode, returning to RIFLEMAN columns after an all-too-long absence, gives us a change of pace in our hunting articles with "Speaking of Quail Guns", page 17 this issue. Goode is a well established authority, Firearms Editor of *Southern Sportsman* Magazine and one of those active upland bird and big game hunters in the field constantly.

NEXT MONTH

Buying a Used Gun, some valuable hints to the fellow who is looking around for a used gun these days when shortage of new equipment is uppermost in everyone's mind. Are you capable of that careful examination, do you know what to look for along lines of practical usefulness, for possible flaws, major or minor weaknesses, cost of necessary repairs? We believe this timely, practical article will prove valuable many times over.

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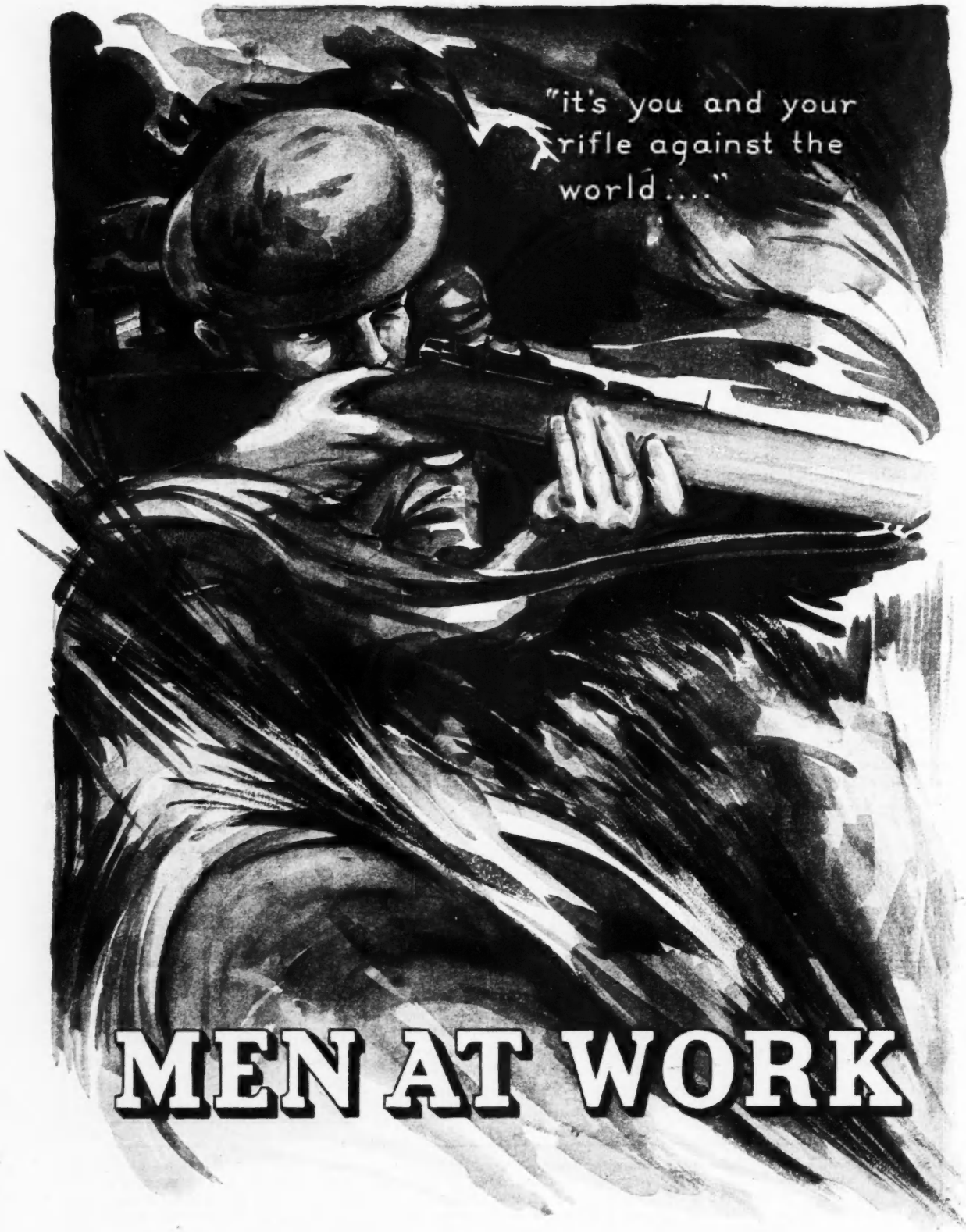

"it's you and your rifle against the world...."
MEN AT WORK

THOSE OF YOU WHO READ THIS, riflemen yourselves, are apt to picture the rifleman in war as you see him at your local matches, calmly set in a good position, well fed, in fine physical fettle, knocking out bulls at ranges from here to yonder. In battle he will be neither calm, in a good position, well rested, nor hitting at any great range. But he must be so trained somewhere, sometime, that he can make hits with his rifle at battle ranges—some six hundred yards or less (mostly a whole lot less)—and perform instinctively and mechanically the firing operations necessary for hitting.

Let's put away this picture of our rifleman back home on the range and see what he will be up against in both defensive and attack situations in modern war.

In our first picture we will have our rifleman on the defensive. Let us presume that he has had ample time—he and his army—to get ready to repel an expected attack. Preparing a position to resist an attack involves considerably more labor than digging the outlawed elbow holes for the prone position. Nowadays our rifleman digs himself a nice, round hole about breast deep. At the bottom he tunnels into the earth in front just far enough so that he can sit in his hole, completely hidden below ground level, with his feet stretched out more or less comfortably in front of him. From this hole he fires from a partly leaning, partly prone position.

Here and there along the line of our rifleman and his buddies are machine guns and anti-tank guns and perhaps some close-up mortars, all likewise in holes with their crews in similar holes nearby. Extra ammunition has been piled in with each weapon and rifleman. Far enough in front of their holes to prevent the enemy from throwing hand grenades into them, our riflemen have strung barbed wire entanglements. Machine guns fire along the front of this wire from such positions and at such ranges that the bullets do not pass more than six feet above the ground level. That's why you read of men crawling up to and through the wire; to walk up to it is suicide.

Our infantry has just managed to get set in time. Here comes the enemy attack! Does our rifleman see anybody? He does not. The first part of the attack is an artillery bombardment. Our rifleman scrooges right down into the bottom of his hole where he is safe from everything but a direct hit. He sees no enemy during this time other than the planes which are bombing and machine gunning his position. His rifle, at this stage, is just something to keep him company in his hole.

Suddenly the artillery and mortar fires lift—go over him—to targets beyond him in his reserve positions. "Ah!" says he, more than slightly punchy from concussion and noise, stretching to determine if he is all in one piece and combing some of the dirt out of his rifle and his neck, "now I get to make me a few bulls."

So he sticks up his head, and promptly becomes discouraged anew. The enemy is now smoking his position—firing artillery shells filled with smoke-producing chemicals. He can't see anything through the smoke, and particles of the burning chemicals fall so close that he huddles into his hole again.

But if he is trained to his business our rifleman knows what is going on out there in front of him. Under cover of that smoke—press reports from the Germans call it artificial fog—enemy riflemen, in front of our wire, are removing our tank mines, clearing a path for tanks through a minefield which our rifleman has planted with much labor. Our machine gunners are firing rapid fire now along the barbed wire, since they can set and clamp their guns and do not need to see where they are shooting. They are reinforcing the wire entanglements with bullets.

The enemy planes are gone. Their own troops are too close to our rifleman to permit the planes to bomb him any longer. But out in front there is the sound of other motors. Enemy tanks are coming up to pass through those gaps which have been cleared in the minefield. The tanks will come through to run down our machine guns, thus enabling their men to get through the wire.

The smoke is thinning rapidly now. The enemy has stopped smoking the position to allow his tanks and advancing riflemen to see where they are going. The final assault is at hand. Our rifleman sticks up his head again in the clearing smoke. Pools and patches of it eddy about and cling to shell holes, mingling with dust kicked up by enemy machine gun fire plastered on our position. If the enemy has mixed a little gas with his smoke to sneak it over when it is most difficult to detect, our rifleman is now wearing a gas mask. He never wore one of those things back home on the range and it doesn't improve his shooting at all.

But he goes to work. It has been a long time since breakfast that morning or perhaps last night's supper, if he had any of either. He has been living in that hole for a couple of days or more, and he's pretty dirty and uncomfortable. The concussion has slightly dazed him. Right now all sorts of things are shrieking through the air, and knocking dirt on him, and it is poor consolation to know that if you can hear them they have already missed you. The nearest friend is some ten or more yards away in a hole of his own. Our rifleman is quite alone, and unhappy. No, this is not exactly in the same mental or physical condition he was in back home on the range. But being a man he sticks up his head. It's he and his rifle against the world now.

Here they come! Tanks! What good is a rifle? But our rifleman fires at them until they get too close, fires at the slits and ports to keep them closed in order to restrict the driver's and gunner's vision, and not in hopes of damaging the things. The tank rolls and sways straight towards him. He ducks down into his hole—he has dug it small and round so that the tank treads will bridge it without crushing him—and the tank runs right over him. If he has a tank grenade he will pop right up, or stay up long enough before ducking, to try to roll it under the tank, hoping to stop it by blowing a tread so that it will be immobilized and our gunners can work it over.

But up he pops when the tank has passed. Now what? Men run at him slowly, draggingly, from the haze and smoke and dust out front. The rifleman flings himself half over the edge of his hole. This is the moment for which he has been trained. Now he can make those bulls, if he can fire fast and accurately, at ranges all the way up to 100 yards!

He aims and fires, aims and fires, automatically, in-

By MAJOR R. C. ANDREWS, *Infantry, U. S. A.*

stinctively, at indistinct, moving targets that are shooting back. Finally he's out of his hole altogether and on top with the bayonet, man to man.

Somehow he and his buddies stand up to it and throw the enemy out of the defended position, back across the wire. A good anti-tank defense behind them, artillery and mortar fires out in front of the wire to prevent more enemy from getting in to close quarters, a couple of machine guns which have been overlooked by the tanks still in position to sweep that wire, a lot of grenade throwing, all this—plus guts and determination and accurate use of his rifle and bayonet—have driven out the enemy.

Now our rifleman can repair his hole or dig a new one, patch up his wire, bury his buddies, go on patrol, and carry more ammunition onto the position, and maybe even eat, and do most everything but rest.

Having managed to hold off the enemy in that attack, the whole complexion of the campaign has changed, and our rifleman and his army are soon ready to do a little attacking themselves. It is their turn to carry the ball.

The enemy position is located, and our rifleman climbs on a truck or an armored troop carrier, which is a hybrid truck with caterpillar tracks on behind instead of wheels. This is a cinch, says you. Oh, yeah! says he. The ride won't last forever.

He climbs off that truck a long way from the enemy and starts hiking toward him. This isn't like the conditioning walks some coach makes him take at Camp Perry either. But he makes it up to an assembly area where he is issued extra ammunition, perhaps is fed, and drops his pack before the attack.

The pattern is familiar to him now. He's been through the same thing from the other side. Artillery is blasting away up front—his pals trying to knock the enemy out of just such holes as he was in when on the defensive, and with no better luck. And here's a part he didn't see before. Enemy artillery fire is falling all around his assembly area and other likely places where his army might be.

His own tanks start passing on their way to the front. The ports are open so that the drivers can see to avoid obstacles, but they will close them pretty soon. Didn't our rifleman make the enemy tankers keep theirs closed?

Our rifleman follows the tanks. The word comes back to halt. Heavy smoke rises from the noise ahead; the enemy is being smoked and blinded just as our rifleman has been. He sees men in front of the tanks, a long way in front while the tanks hang back, moving restlessly about to avoid the shell fire. These men are stepping cautiously, picking up cans and carrying them to one side. They are clearing a path through the enemy minefield so that the tanks can pass through safely. Ahead of these mine pickers he sees other men crawling forward to the enemy wire to cut a lane for the men to go through.

The smoke ahead is clearing, thinning, blowing away. Our tanks churn ahead. The rifleman does his best to keep up with them so that he will be on hand to get the enemy machine gunners who are driven into their holes by the tanks. The big machines go right over the barbed wire as if it were thread.

The tanks charge the enemy position, overrun it, fan out, waddle around the enemy position, moving, moving, to offer less target to the enemy anti-tank guns, seeking out the enemy machine guns which cover the barbed wire through which more riflemen are now struggling. Other tanks go on through to rear areas. The tanks overlook a couple of enemy machine guns and some of our rifleman's buddies don't get through the wire.

Our man is through now, and has perhaps a hundred and fifty yards to go. He sees a head sticking out of a hole. It is wearing a helmet so plastered with mud and dirt that it blends into the surrounding earth. If our rifleman hadn't seen it pop up he wouldn't have seen it at all. As in hunting, the movement caught his eye.

Our rifleman drops to his belly, aims, fires. The head subsides into the hole, slowly. Our rifleman is up, stumbling forward at a shambling run, his mouth open, sobbing for air, his legs like lead. Another head pops up. Our rifleman plows to an unsteady halt and snapshoots—one, two, three—thank God there's no bolt to work on a Garand! The head goes down. Our rifleman goads himself into running forward again. Make him a few bulls? Every shot *has* to be a bull.

This is a picture of typical present-day battle, unless all observers on the other side are conspiring to send back the wrong picture. Why should hours and hours be spent in training riflemen if they are going to get only a few such shots? Men who saw some of the fiercest action of World War I estimate that they fired an average maximum of twenty rounds per day.

The answer is that the *rifleman must be so thoroughly trained that no matter what conditions he has to fire under, his shots will be hits!* As in football, each man must take another man out of the play so that his team can gain the advantage. In battle he must take out more than one man, if possible. Every man taken out weakens the enemy just that much more, and assures us eventual victory. A casualty requires more men, transport and supplies to take care of him than does a healthy soldier.

If our rifleman shoots sooner than the enemy, and straighter, his opponent, and not he, becomes a casualty. Toward that goal his entire training must be directed. The individual rifleman, multiplied by thousands and thousands, is the backbone of an army.

An Editorial

GUN-SHY DEFENSE

FOR months there has been much ado, but not much doing, about "all out" defense in the United States. "Civilian Defense" in its inception was a desirable effort to awaken the average citizen to dangers ahead. Its purpose was laudable but because its primary purpose was propaganda the program was given into the hands of people who were known more for their public activities than for their technical knowledge in the defense field. Their well-intentioned effort prior to Sunday, December seventh, deserves America's deepest thanks. BUT—*with our nation at war no national defense effort by amateurs can be condoned when experts are available for the task!*

In July, 1940, a year and a half ago, the National Rifle Association and its affiliated clubs offered their services, range equipment and man-power to the Governors of the forty-eight States to "aid in training militia units for home defense purposes whenever the Governors may feel the organization of such units is desirable." The result?—

In a few localities where a civilian shooter happened to be favorably known to the *political* authorities the trained services of the N. R. A. club members have been utilized. In a majority of State (Home) Guard units small arms training is still non-existent or pathetically inadequate.

On July 3, 1941, the National Rifle Association addressed a letter to The National Director of Civilian Defense, outlining five methods which would profitably utilize the services of our organized shooters. The result?—A courteous "Thank you" and the information that there were no plans for small arms training of civil defense units.

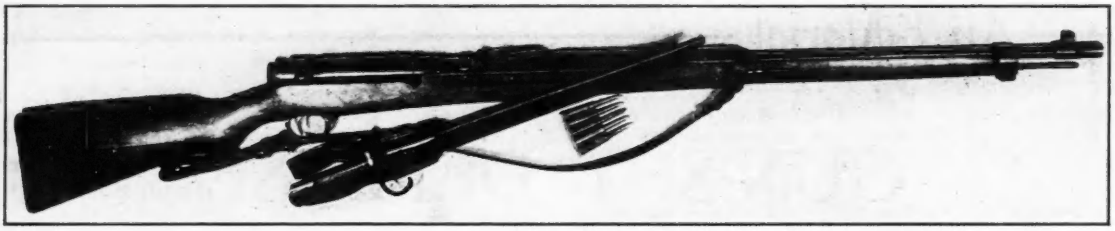
All over America auxiliary police forces are being formed. "Only a few," we are informed, "are to be armed—*except in emergencies.*" Which are those "few"? Who will teach them to shoot? What is to happen in those "emergencies" when additional members of the auxiliary police *are* to be armed? Armed with *what?* Trained to handle their guns *when* and by whom?

In our September issue, we described some of the things that America's civilian shooters are doing to *practically* aid our national defense effort. We repeated the five-point program which had been laid before the National Director of Civilian Defense in July. Since then additional clubs have started *local* programs with or without the cooperation of their "civilian defense" councils.

The National Rifle Association has deliberately delayed undertaking a defense program on its own initiative. We have desired above all else to avoid the appearance of hysteria or publicity-seeking. We have offered constructive suggestions and patiently waited for some co-ordinated plan to be officially approved. Now America is at WAR—*and still nothing happens!* Guns, and men who know how to handle them, are at a premium in a hundred places in civilian life as well as in the armed Services. Thousands too old to serve in combat can serve in civil capacities, armed or as small arms instructors.

It is high time that someone—the President, the Secretary of War, or the National Director of Civilian Defense—takes steps to utilize those gun-wise civilians, organized under the N. R. A., disciplined and trained in the small arms instruction methods of our own Army, who want to "do their bit" and who are becoming more and more impatient with the prevailing gun-shy attitude of "defense" officials when our nation is at war.—C.B.L.

REMEMBER PEARL HARBOR!



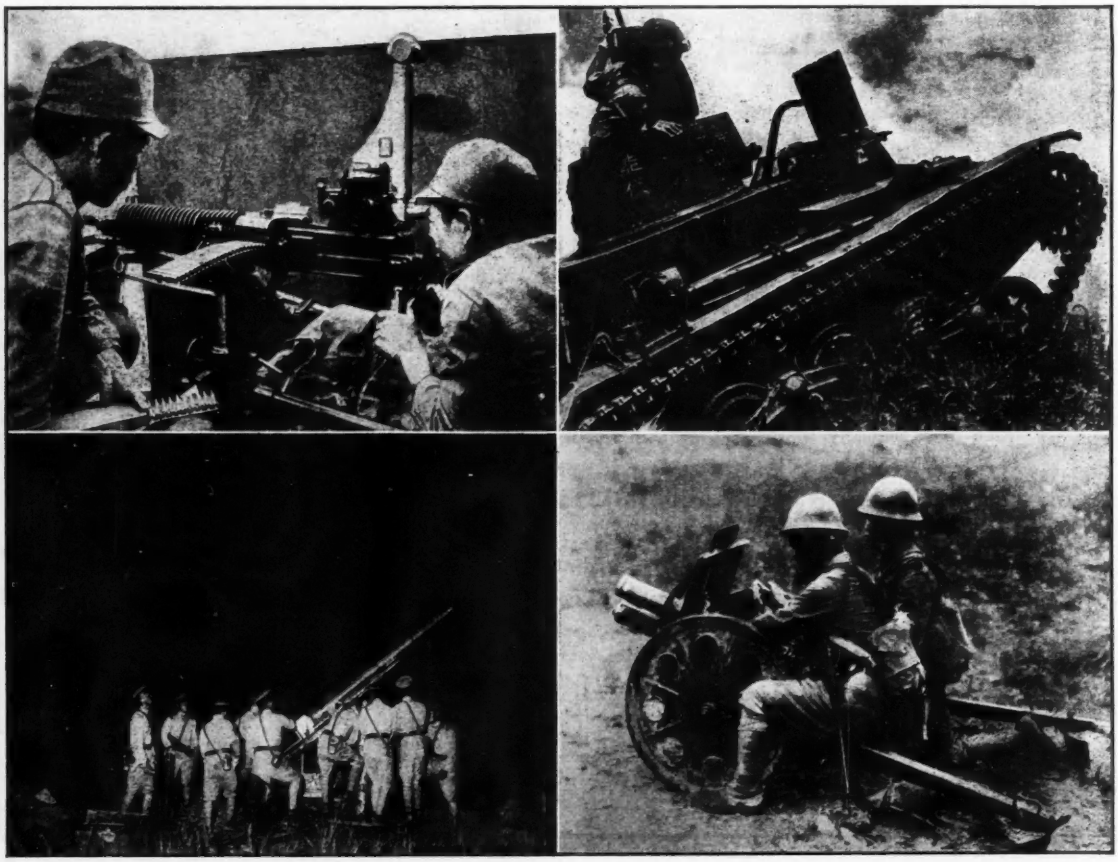
JAPANESE ARMY WEAPONS

AFTER three weeks of a war that has followed inevitably the sudden attacks on the Navy's Pearl Harbor base, U. S. citizens are hopping mad at the Japanese nation, and determined to knock them out of this war they insisted on starting—quickly and thoroughly.

Beating an individual, or a nation, demands that you first know why he is fighting, how he is apt to fight, and what he fights with. The pictures on this page supply a partial answer to one of these questions. This rifle and machine gun, the little infantry field gun, possibly even the light tank are hammering now at U. S. Pacific outposts. This anti-aircraft gun with its clump of anxious Nipponese soldiers will be shooting at U. S. air raiders in the first exciting action of its hitherto uneventful life. Japan has many other arms, paralleling those of the German army, whose advisors have built it up over past decades. Her 1922 Nambus, gas operated light machine guns, are plentiful and good; her Army has plenty of heavy machine guns, mortars, pistols, and all of the other implements of modern fighting. A few of them are as efficient as equivalent U. S. weapons, but Americans can be sure that with none of them can the Japanese gunner give as good account of himself as can our own fighters.

Last February these pictures were published in THE AMERICAN RIFLEMAN, illustrating a lengthy article on the Army of the Nipponese militarists. By no means out of date, the weapons described on those pages as military curiosities twelve months ago are the same arms American troops must put out of action in today's Pacific war.

International from "N.O.D."; Wide World; Acme (2)



"SHOOTING *across the* BOARD"

By Frank Parsons, Jr.

An Outstanding Collegiate Coach Analyzes the Finer Points of Gallery Shooting. The First of Three Parts

Essentially, the coach's function is to short-cut the work of the shooter. In other words, to correct mistakes and point out why they are mistakes, to illustrate what is correct and why it is correct. All these points, right or wrong, would undoubtedly be discovered in time by the experimentive shooter who tries to iron out his position but each error which the coach corrects will permit work on smoothing out points further along the line toward top scores.

The human body having the variations it does makes necessary slight alterations in different positions from one shooter to the next. For example, the fellow with very stocky thighs may have difficulty in sitting on the same part of the foot in the kneeling position as the slim man can do. Generally speaking though, any normal, healthy person can be made into a good rifle shot.

A good rifle shot, by the way, is not born that way. He may be born with slightly faster reflexes and better coordination and grown up with normal eyesight and a body which is not too much overweight, all of which helps. But so long as a fellow will follow instructions and TRY to avoid making the same mistake twice, he can be a rifle shot and a good one. How good depends on him and his desire, because work is the only answer. I, too, have heard "Well, so-and-so is a born shot" and I'm sorry if I've spoiled someone's alibi but these are the cold facts.

It is anybody's guess whether more shooters in this country are interested in prone only or three position shooting. It is my guess that three position shooting attracts the majority. I know it is the type of shooting which has continued to fascinate me. From N. R. A. reports there are many more prone matches than three position matches in registered tournaments in this country. Go to Switzerland, where they shoot like we play baseball, and the reverse is true. It is just barely possible that their three position shooting provides the fascination for the shooter and spectator alike.

Right now might be a good time to point out that the good three position shooter does not have to be tops in any one position. Talk about taking the pressure off, how is it to realize that Mulligan can beat you prone, Flannigan can beat you kneeling and Harrigan can beat you standing, but when the scores are all added up, you can do a little silent chuckling. The mental assurance you get from knowing you have three sound positions is a fine thing and will hurt your shooting not at all. Also, a point worth mentioning is the fact that three position shooting puts the burden of proof more on the shooter and his ability rather than on the gun and its ability. In other words, the expensive gun, while desirable, is nowhere near the vital factor it is in prone shooting.

The three position shooter should be in as good physical condition as possible. One of the attractions of rifle shooting is the fact that no strenuous conditioning or exercising is necessary. However, the person who realizes, and capitalizes on, the advisability of having his body in good condition has the advantage. It is hard to overestimate the desirability of a strong pair of legs in standing and kneeling shooting and there is nothing better than plenty of good brisk walking to acquire them. In addition, there are three simple exercises we use at George Washington which may be worth mentioning. I believe they should form part of everyone's morning routine but they have shown to particular advantage in conditioning the shooter.

Number 1. Stretch out on the floor, face down, keeping the body in a straight line and rigid, with only the toes and the palms of the hands touching the floor and the arms straight. Slowly let the body down to the floor, still perfectly straight, until the chest touches the floor. Then slowly push the body off the floor, still as straight as possible, until the arms are again extended. These "push-ups" are excellent for the development of the arms and chest.

Number 2. Lie on your back on the floor with the arms over your head so a straight line can be drawn from fingers to feet. Bring the body up to a sitting position and the arms over head and down until the fingers touch the toes, keeping the legs straight. Then slowly go back to original position. This is a general stretching exercise, particularly good for the stomach.

Number 3. Stand erect, with hands on hips. Keeping the feet together, bend the knees until you are sitting on your heels. Then straighten the knees and come to an erect position again. This is beneficial to all leg muscles.

Do each of these twenty times daily and you will notice a marked improvement in your general condition. The average person cannot do twenty of these the first time

they try. If you want to play a game with yourself, start on the first of the month and do one. On the second do two each until you have reached twenty and then continue to do twenty from then on. Easy does it and remember, don't overdo it. Twenty of each is plenty. It's the regularity that counts.

It is also the attention to small detail that makes a rifle shot. I have missed many a meal because I would have had to eat just before a match. About the worst thing you can have in your stomach just prior to shooting is a hot, solid food and next, a hot liquid. Either will start the old digestive system working which means the heart works harder pumping blood and some of us wonder why we have an excessive heartbeat about the time we want to shoot. It might be well to point out the effect of coffee on the shooter. In 1928, I made exhaustive tests in collaboration with the Psychology Department at George Washington University. Doses of caffein were taken in pill form of from one-half to four grains, shooting ten shot prone groups before and after taking, with variable waiting periods before shooting. The tests conclusively proved that caffein will increase the size of your groups. A heavy dose of three grains increased the group size 60% after a thirty minute wait.

And now for the positions. There are two reasons for devoting less space to prone shooting and more to kneeling and standing. Complete instructions on the prone position have been published many times, hence we shall discuss this position more from the viewpoint of bringing out points which are so often overlooked. Secondly, the three position shooter should do his practicing on the theory that the weakest link (or position) should be strengthened. This will automatically mean that four or five times the work must be devoted to the kneeling and standing, and instructions on these two positions will be dealt with accordingly.

The pictures throughout this article are of Dana Wallace, a member of the 1936, '37, and '38 George Washington University teams. He was captain of the National Champion 1938 Team and was honored by being selected on the second All-American Team in 1936 and won his Golden Bullet on the All-American Team in 1937 and 1938. He is now Assistant Coach at George Washington University. He is of average size and build and his positions are well nigh faultless.

In assuming the prone position, the left elbow is the first part of the body which should be placed in its proper position on the ground or shooting mat. (All instruction in this article will be made with the assumption that the shooter is right-handed.) The sling of the rifle should be adjusted well up on the arm before getting down in position so that when the shooter does get down, the left elbow of the average person will be at an angle about like that in the photograph. The left hand should be all the way out to the front sling swivel and well under the forearm of the stock, so that the weight of the rifle is on the palm of the hand and not on the fingers. The hand should be entirely relaxed. It is surprising how many shooters unconsciously grip the stock with the fingers of the left hand. If the left arm is too short and you have no adjustable sling swivel to bring up to where the left hand should be to obtain the proper angle, fasten a block of wood or rubber on the forearm of the stock so that the crotch of the hand will rest against it and permit the hand to be relaxed.

Place the left elbow as far under the rifle to the right as possible so that when you come down on the right elbow, the left elbow will be almost exactly under the barrel of the rifle. In placing the right elbow, the shooter should have the feeling that he has reached out to place it rather than that he is propping himself up with it.

As for the angle of the body, I suppose thirty degrees from the line of fire would be about perfect—until you get in a match where the firing line is a little crowded and you will make the angle less, and like it. Seriously, if you can get used to assuming an angle somewhat closer to the line of fire with the legs spread only fifteen or eighteen inches apart, there will be times when you will be bothered less and the other shooters will like you more. Once you get used to it, you will find that the position provides no disadvantages at all.

Before you fire a single shot, put the rifle to your shoulder with your eyes shut and your head in sighting position. Then open your eyes and look through the sights. If the gun is not pointed properly, move your whole body until it is. Then be sure not to change the body or the left elbow until you have finished firing. Minor adjustments from right to left may be made by moving the right elbow forward slightly, while moving it backward, of course, will move the rifle from left to right. This trick of getting into position with your eyes shut is not necessary, of course, for the experienced shot who realizes the necessity of assuming the same identical position time after time, a position which requires no muscular energy to push the rifle from one side to the other instead of adjusting the position; in other words, if you have your position in the groove.

The right hand should grip the stock of the rifle firmly but without so great a pressure as to strain the muscles of the hand. There is no one exact point on your forefinger which should be in contact with the trigger for the squeeze. I squeeze the trigger with the middle of the second joint of the forefinger for two reasons: first, because I have fingers which are longer than normal and second, because I can get greater leverage or pressure control, which seems desirable to me. The fact that many of the finest shots squeeze with the tip end to the middle of the first joint bears out the fact that it is not what part of the finger is used in squeezing but whether you squeeze or not.

We have probably all heard of the well known "follow-through" in one sport or another, whether it was golf, tennis or swinging a baseball bat. Don't kid yourself that there is not a follow-through, maybe not as notice-

able, but just as important, in rifle shooting as in any other sport. Good shooters do it unconsciously. The inexperienced shooter should keep himself conscious of following through on each shot until it has become second nature to continue to squeeze for that split second or so after the shot is fired. It will help you to fix your call of the shot, in other words, mentally to determine where the shot has gone, which is so necessary to becoming a good rifle shot.

Always remember that in the prone position every muscle in the body must be completely relaxed. If any muscle in your body is being exerted to remain in position, then the position is not correct and should be changed.

The accompanying photographs of Wallace illustrate a prone position which is completely relaxed and which are well worth studying and comparing with the points mentioned above. Be sure to remember the extreme importance of being able to duplicate your position the next time you shoot. It is well worth while to mark the notch on the sling which provides the best angle of the arm for you and to try to remember exactly how your face fits on the stock so that it also can be duplicated.

Note the complete relaxation of Wallace's position. On comparison with later pictures, the area inside the right-angle lines (the upper part of the body) on page 9 will be found to be remarkably like the kneeling position.

There is just one more little tip that each of us should paste in our hat and that was mentioned earlier in this article. The good rifle shot is not born that way.

THE PROPERTY SEIZURE ACT

1941 WAS THE FIRST of the past eight years in which Congress has considered no new Federal Laws aimed directly at the sale, transportation or use of firearms by civilians.

The one Bill which might have had a serious effect on the civilian ownership of firearms was the so-called "Property Seizure Act." This Bill was introduced at the request of the War Department and was intended to assist the Federal Government in speeding up the production of materials required for the national defense. As originally drafted, the Bill *could* have been interpreted so as to authorize the registration and requisition by the Federal authorities of privately owned firearms. Under the active leadership of Congressman Kilday, of Texas, an amendment was added to the bill to prevent the registration or requisitioning of privately owned guns. After some political maneuvering and two conferences between the Senate and House managers of the Bill, the Kilday amendment was made a part of the law.

The Property Seizure Act is now officially known as Public Law 274, 77th Congress, Chapter 445, First Session. The law contains the following provision:

"Nothing contained in this Act shall be construed—
(1) to authorize the requisitioning or require the registration of any firearms possessed by any individual for his personal protection or sport (and the possession of which is not prohibited or the registration of which is not required by existing law),
(2) to impair or infringe in any manner the right of any individual to keep and bear arms, or
(3) to authorize the requisitioning of any machinery or equipment which is in actual use in connection with any operating factory or business and which is necessary to the operation of such factory or business."

As we go to press, the War Department has had introduced a Bill which would amend this new law by striking out sub-paragraph (3) as above quoted. No attempt, however, has been made to eliminate the provisions concerning the requisitioning or registration of firearms possessed by individuals for their personal protection or sport.

Perhaps the greatest value of the Kilday Amendment, insofar as future anti-firearms legislation is concerned, lay in the report of the House Committee on Military Affairs recommending the adoption of this amendment by the House of Representatives. The Committee said:

"The amendment provides in substance that nothing contained in the bill shall be construed to authorize the President to requisition or require the registration of firearms possessed by an individual for his personal protection or sport, the possession of which is not prohibited nor the registration thereof required, (by existing law—ed.) and that the Act shall not impair or infringe the right of an individual to keep and bear arms. It is not contemplated or even inferred that the President, or any executive board, agency, or officer, would trespass upon the right of the people in this respect. There appears to be no occasion for the requisition of firearms owned and maintained by the people for sport and recreation, nor is there any desire or intention on the part of the Congress or the President to impair or infringe the right of the people under section 2 of the Constitution of the United States, which reads, in part, as follows: 'the right of the people to keep and bear arms shall not be infringed.' However, in view of the fact that certain totalitarian and dictatorial nations are now engaged in the willful and wholesale destruction of personal rights and liberties, your committee deem it appropriate for the Congress to expressly state that the proposed legislation shall not be construed to impair or infringe the constitutional right of the people to bear arms. In so doing it will be manifest that, although the Congress deems it expedient to grant certain extraordinary powers to the Executive in furtherance of the common defense during critical times, there is no disposition on the part of this Government to depart from the concepts and principles of personal rights and liberties expressed in our Constitution."

When the House of Representatives accepted this Committee Report and insisted on the inclusion of the Kilday Amendment over the original objection of the Senate, the practical effect of the action was to put the Congress of the United States on record as approving the sentiment expressed in the Committee Report. The importance of this action lies in the fact that it is probably the first time since debate on the Bill of Rights was a live topic that the Congress of the United States has been given the opportunity to vote upon the clean-cut issue of whether or not the individual American citizen should be given the right to possess and bear arms for legitimate purposes. This action by Congress should have immense value to sportsmen when State Laws or City Ordinances are proposed which would infringe "the right of the people to keep and bear arms."

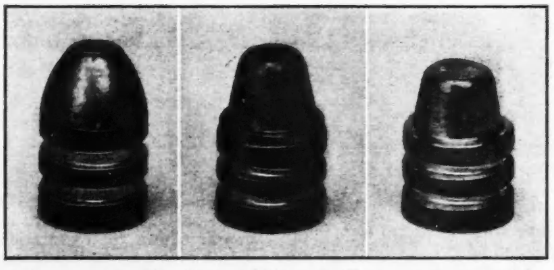
One other Amendment to an existing Federal Firearms Law was adopted by the 77th Congress. It does not affect the civilian shooter, but permits the shipment of pistols and revolvers through the mail to Federal, State or Municipal officers who are authorized by law to carry such weapons in the performance of their duties.

SEMI-WADCUTTER .45's

By HARRY W. REEVES

EVEN THE THOUGHT OF RELOADING brings a frown to most faces lately. If you have some primers saved out, then it's lead you can't get. If you have the lead, you can't get any primers. Anyway, it does no harm to talk about reloading and shooting.

Shooters for years have been intrigued by the .45 Autoloading Colt Pistol. And for just as long there has been trouble in mastering the cranky piece. With Government ammunition, once easy to obtain, a fellow had to clean it religiously. Commercial stuff was expensive, and few of us could afford to put out around four cents a shot. Besides the jacketed bullet was always hard on the barrel and required frequent cleaning to keep out metal fouling.



Left to right: The heavy 280-gr. bullet we started with; The same bullet with the nose partly changed; Right, the 215-gr. Rowland semi-wadcutter bullet in final form

All of this brought about a condition demanding that we reload if we wanted to shoot the .45 much. By reloading a fellow could get some mighty fine results, equal to factory ammunition. However, with the advent of the "tuned up" service pistol there came a desire for a load that would better suit the needs of the target shooter. Primarily among these needs was an accurate bullet that would cut a clean, easily-scored hole in the paper target. The answer was in the semi-wadcutter bullet. When first tried out, much trouble developed and cancelled out any advantage it gave the shooter.

One of the first semi-wadcutters which reached reloaders was a 200-grain bullet which gave fine accuracy, but was somewhat mean in its action in the gun. Frequent malfunctions resulted from the long nose. I purchased a mould for this bullet when it was first introduced and used it for one entire summer. Did that thing ever cause me grief! Twice within a month I had National Records "in the bag" when the !*#&?/—bullet would jam in loading. Both times I had to clear another jam on my "alibi" string with the result that I lost a shot both times, and the records. I finally decided I could never get the bullet to work as I wanted to without changing a good gun in some material way. The bullet actually weighed only 190 to 195 grains in a good hard mixture of lead. That was too light in my estimation.

Just as I was about to go back to the round nose bullet I heard of a new semi-wadcutter. It was at the Pre-Perry tournament in 1940 when a friend, bless him, loaned me ten cartridges to try out. I used them in the .45 Team Match over the National Match Course. To my amazement I scored a 99 x 100 at fifty yards slow fire with those same ten rounds. Brothers, I was interested, to put it mildly. Investigation showed the bullet to be a 215-grain semi-wadcutter. Right away I busied myself at the manly art of "chiseling" a thousand of the bullets to experiment with. I loaded some according to the mould maker's recommendations and liked them so well that I have since used exactly the same powder charge. My top scores didn't increase much, but my average did go up over the next couple of months, so I decided to adopt the bullet and load. Of course, I wanted to know more about it, and proceeded to inquire, with the following results. I found that the mould was made by Ed Rowland of Los Angeles. He tells me that the bullet is the result of making a semi-wadcutter of the old 280-grain .45 revolver bullet. The process was to get a semi-wadcutter with the same length of barrel bearing as the 280-grain, butting down the weight of the bullet by eliminating all possible lead forward of the barrel bearing surface. These experiments ran into bullet weights all the way from 260-grains to 215-grains. Rowland finally rested at 215 after much experimenting in conjunction with one of the country's leading .45 shooters.

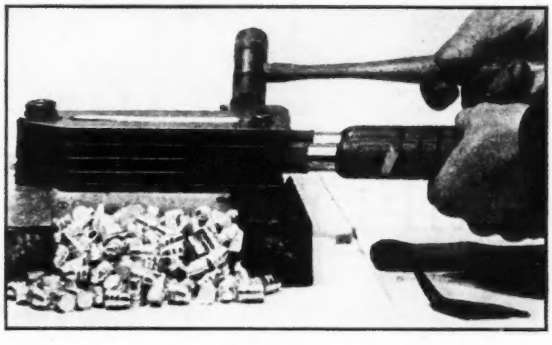
This bullet when properly loaded is no "powder-puff," though the recoil is a little lighter than standard factory match loads. Part of this may be due to the use of a lead bullet. My scores for the year and more that I have used this bullet have been uniform and higher in average than the past years. I have not had a single malfunction due to the ammunition since I started using this load.

I will try to describe the load I use and the process of loading it. In moulding I use an eight cavity Rowland Self-Ejecting mould, following the mould maker's recommendations in using it. The alloy should be hard (about 5% antimony), or if you are unable to get antimony, use tin and get a bullet that is hard enough that a thumb nail won't scratch it. Use any good lubricant for the bullet, being sure to leave no grease on the base of the bullet. Size the bullet to .452". In loading for the .45 ACP it is necessary to full length size the cases. My loading tool is a "Detroit Reloader" which forces the case all the way through the sizing die base first and drops it out the bottom of the die, decapping at the same time. For a powder charge I use 4.5 grains of DuPont No. 5 Pistol powder. I have also had good results in experimental loads with Bullseye and No. 6 Powder. However, I stick to the No. 5 load for my own use and can speak from experience with it over one entire shooting year of use. I have experimented some on bullet seating depth, and as far as accuracy is concerned I have found no appreciable difference. This bullet is very stable and lends itself to light or heavy charges of powder with full accuracy retained. I also found very little difference in point of impact with various seating depths. However, for practical reasons I believe it best to seat the bullet to a depth that leaves the shoulder of this bullet about 3/64" out from the case

mouth. This protects most of the bullet from marring and deformation, yet leaves a bit of lead to cushion any tendency to jam and allows the lead to shear rather than hang up on the hard brass case mouth.

When you start shooting this type of bullet in the autoloading pistol you may run into some minor trouble. With this 215-grain bullet and the recommended powder charge, you will encounter no loading, extracting or ejecting troubles caused by the cartridge alone. However, your trouble will likely be from loading. This almost always is caused by the nose or shoulder of the bullet becoming jammed against the ramp at the junction of the barrel and receiver. This is due to the barrel extending slightly past the receiver part of the ramp, or from the two not meeting as they should to form one smooth ramp. This can be corrected by cutting away part of the barrel ramp or otherwise cutting so as to make the two parts form a smooth loading ramp. Be sure to smooth it carefully after cutting, and don't cut so much as to make the gun unsafe.

Of course, to get the full benefit of this fine load you need an accurate shooting gun. (Did someone say "and a good shooter"?) This can be attained by having your gun "accurized" by one of the several well-known gunsmiths or gun craftsmen who advertise in THE RIFLEMAN. Most shooters advise that the gun have the high type sights of ⅛" width. Special stocks made to fit the hand are a help in getting the *uniform* grip on the gun so necessary to good scores. One practice that I follow with my "accurized" forty-fives is laughed at by a lot of the fellows, but I still do it and swear by it and I've never had an accurized gun wear out on me yet. I use plenty of oil on all the moving parts. In warm weather I use ordinary No. 10 SAE motor oil, and I see to it that all parts are liberally covered. When the gun gets dirty from powder residue or dust I clean it and renew the oil. In cold weather I use a light weight gun oil, naturally a thin coat so as to avoid having the gun gum up from cold grease. Wish I lived where I wouldn't know about freezing and cold except by hearsay.



Above: The author's .45 with special grips, and a loaded cartridge and single Rowland bullet. Below: The Rowland self-ejecting gang mould in operation

I can't see any practical reason for two loads for any gun, and use the same at fifty yards and at twenty-five yards. With the above mentioned load I sight my gun in for a center hold at fifty yards and get a nice six o'clock aiming point at 25 yards.

If you like nice big round holes in paper targets, try this .45 Semi-Wadcutter load. Here's hoping your scores mount up by lots of points.

FEDERAL FIREARMS BILLS

TWO BILLS AFFECTING GUN USERS are now on the Senate and House calendars. One is a bill making it a Federal offense for individuals to possess firearms on an American ship without having secured the permission of the master of the vessel. This law, of course, does not affect civilian shooters, and if anything appears in the newspapers regarding its passage, sportsmen do not need to worry about it.

The other bill is the so-called "Federal Explosives Act." A Federal Explosives Act is already on the books and automatically became operative with the Declaration of War. The bill now being considered by Congress is merely an attempt to clarify and to improve the administrative provisions of the existing law. A conference between officers of the National Rifle Association and the Federal officials who will have charge of the administration of the new law, if it is enacted, has indicated that civilian handloaders will not be interfered with when the bill is finally enacted into law. The law will require a Federal permit for the purchase and possession of small arms smokeless powder, but it provides a very flexible plan for the appointment of permit-issuing officers. A plan for the utilization of properly authenticated officials of the National Rifle Association and its affiliated clubs to be permit-issuing officials will very probably be put into effect if the law is enacted. At the present time the two last-named bills are still awaiting final consideration by Congress, and have not become law.

International

RIFLES *along the* BIG DITCH

By Sgt. Joe McCann

Six weeks now I've been here at the belt-buckle of the world (ain't that cute?), and the Spanish I learned in high school has come back to me so well that I can walk into any bar on the Isthmus and say "Scotch and sody," and get something to drink. I had only a few hazy ideas concerning this somewhat distinguished bit of engineering enterprise when our troop transport eased into the harbor at Cristobal a while back. (Seems like a year, easy. They say after a few months it seems like you've been here all your life.) Lots of people, thought I, are unduly impressed by big things purely because of their size; they forget that most big things are just a lot of little things put together.

Accordingly, I expected to confirm my notion that the Canal was just a ditch—a forty-mile ditch, and the most important in the world, but a mere ditch nevertheless. You see what I mean—a series of forty ditches a mile long, and nobody would be much impressed by a one-mile ditch. Wrong again!

It's not giving away any military secrets to report that Panama is just about the busiest place in the world just now. Uncle Sam poured out a lot of blood, sweat and money to build this little project, and it's obvious that he's ready to pour out a great deal more of the same to keep anybody from taking it away from him, or rendering it useless to him. I get no little satisfaction out of knowing that I am entrusted with a tiny piece of this latter-day job, for the strategic value of the canal to democracy can't be counted in any kind of money as I understand the term. It may well be the turning point for the question of life or death for liberty in the whole world. Most of the soldiers, sailors, marines, engineers, clerks, typists and dock-wallopers down here have the same solemn respect for their jobs as I have, for that very reason.

I guess I'm not much of a nachel-born military strategist, because frankly I figured that if there was any place in the world a rifle would be small potatoes, Panama would be it. Ah! But how wrong I was, as they say in the movies.

I was led astray in my notions, I suppose, by the articles in the picture magazines and the news reels and such, showing the imposing defense works of the Navy and the Coast Artillery Corps down here. Not that they aren't perfectly true. They just fail to give a complete picture, that's all. They toot up the things that make up into impressive photographs, such as 16-inch guns, battleships, and airplanes. And you can't blame them, I guess; it *would* look rather odd to print a picture of an ordinary doughboy with his M-1 rifle, taking his usual month of target practice on the ranges at Chiva Chiva, under the following caption—"Here's what makes the Canal impregnable."

That doesn't imply the slightest disparagement toward any of the installations of the various branches of the armed services down here. I've seen uncountable flocks of our new planes whining about overhead and fading out to sea, and I'll lay my money on their noses any time. I've seen some of the big guns that they have set up—so big that I could slide down the bore without greasing myself (and I ain't no midget.) They toss a truckload of TNT at a time.

And you should see the anti-aircraft batteries go into action. Every night in every direction you can see scores of searchlights playing tick-tack-toe on the clouds, and they don't let more than a small fraction of them practice at any one time. They tell me that you can see the beams in Yucatan. No use trying to find the darn things in the daytime, however—the jungle swallows 'em up.

I can't offer even a half-way decent report on the Navy's work down here. Ask a Navy man about their Canal defense organization and all you get is: "It's very good." I've seen lots of fighting vessels and Navy planes around, but what they're doing is something that nobody who knows is willing to discuss, even with an old soldier with an Irish face.

In a way, the picture magazines are right. All those battleships, planes, searchlights and big guns do make the Canal impregnable—impregnable to attack from the kind of forces they are designed to combat.

And the funny thing about it is the very efficiency of those spectacular weapons is what makes the rifleman so important in the defense of the canal. Of course, no form of attack can be ruled out these days. Aerial bombardment, seaborne landing parties, perhaps crossing the ocean in submarines to evade our Atlantic fleet; bombardment by battleship, if our enemies could manage to spare a few, but what a reception they'd get. And don't think the Great Dictator doesn't know all these things. He's as smart a warmaker as ever lived. Just guessing again, but I'm betting he knows better than to butt his square head against a stone wall.

"What's left?" as Sherlock Holmes used to tell Doctor Watson. You remember? And what *is* left? Three conceivable means, all of which the continentals have used in other places and at other times with finesse: Sabotage; the Fifth Column; and Land Invasion.

If you could see some of the secret measures that have been taken to guard against sabotage down here you'd be feeling better on that score. I really don't know, but they say that there is a section of engineers at work down here—some of the smartest in the world—who do nothing but devise new and ingenious ways of sabotaging the Canal or parts of it. Then they turn around and devise a 100 per cent effective means of countering each of these ways.

I know of some other things I can't describe; there's a pile of things they've done that I *don't* know about.

Now the Fifth Column question. In the first place, the Central Americans have already showed almost unanimous loyalty to the ideal of Pan-American solidarity. And anyway, even if every civilian on the Isthmus were a wolf in cheap clothing and had a machine gun under his bed, there are enough soldiers here to lick the whole caboodle, bare-handed.

But this land attack business. That looks at first like an extremely remote contingency, because he would have only two possible avenues of approach—both of them extremely hazardous. But remember that the Nazis sacrificed some twenty thousand hand-picked parachutists—the cream of the whole German Army—to gain Crete. And the military value of Crete, while certainly considerable for air operations against Egypt or Suez, is not a drop in the bucket when stacked up beside the world-strategic significance of the Panama Canal. Any country seeking to control international commerce, or to carry out any military operations against the continental United States or any of her outlying areas, doubtless would consider it worth while to sacrifice half her total land forces to gain a bridgehead in South America and unchallenged control of the canal. It would be a long shot, but if it worked there certainly would be hell to pay before we could get everything "well in hand" again.

So, just for fun, let's say they decide to play the outside nag—maybe with a European and an Oriental country

International

"Ears" of the Panama Canal's anti-aircraft defenses are these grotesque plane detectors, which can pick up sound of approaching planes while still miles off

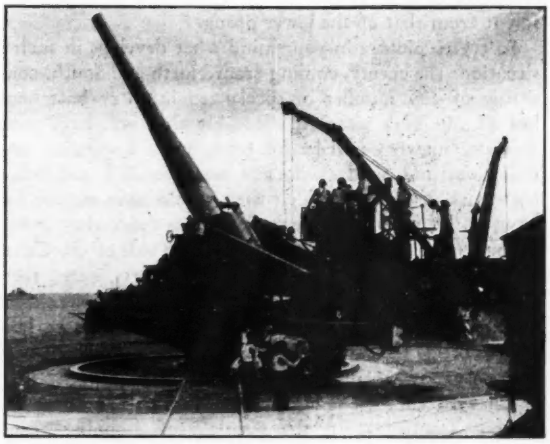
operating in concert, to make the problem as difficult for our team as possible. A glance at the map shows that they must move up the Isthmus from the direction of Colombia, or down through Costa Rica, or both. The approach from above is slightly less forbidding, so we'll assign it to the Rising Sun boys. How they happen to be in such a position to start with is no concern of ours; the problem begins with the initiation of a land pincers movement against the Panama Canal.

Personally, I'd rather let the old Panama Canal go than to put an effective combat force through that tanglewood to take it, but some people are never satisfied. It would mean a specialized corps, intensively trained for many months in jungle maneuvers. But then, who knows whether such a force is not being so trained somewhere in the world right now? Remember how surprised everybody was—especially the British—when the unheard-of *Afrika Korps* popped up out of nowhere with troops who had had months of daily sun-lamp bakings at desert temperatures, and reduced three months of British consolidations in Libya in less than two weeks.

I'm afraid we'll have to concede that there would be a good chance for a well-trained, well-disciplined force to

Heavy coast artillery guns guard every possible approach to Canal. This one, which commands one of entrances, has 14-inch bore, is next to largest U. S. gun

International



make it through from the South American continent. And they probably could approach upsettingly close before detection, too. Airplanes can't see what's going on beneath that solid green mat. The only kind of patrol that would really cover the ground would be a "reconnaissance in force" by our larger infantry units, and it would be impractical to keep that up continuously. Only good chance of advance notice of the enemy's presence in the jungle would be rumors from the native villages. And of course our intelligence service has well-established contacts along that line.

International

Panama's dense jungle will hide easily small combat units like this. Their 37-mm. gun is adequate for any armored vehicle that might be landed near the Canal

The approach from the North would be somewhat different. There is plenty of jungle that way, too, but there is also a fairly good road, mostly paved, which now extends well up into Mexico and some day will be part of the unbroken Pan-American Highway. Also, there are occasional wide areas which are as high, dry and treeless as the Wyoming plains. These would be of little use to an enemy force except for night bivouacs, since our patrol planes are watching such areas as close as they watch the highway.

A few road-blocks, plus a sprinkling of tank and truck mines along the highway, would plug up the only convenient avenue from the North, and in the final analysis the movement from that sector would be hardly any different from that of the lower prong.

So try to picture in your mind what develops in such a situation: the enemy, coming from North and South, consisting of any number of specialized infantry battalions less all anti-tank weapons. Possibly they will have pack animals, but they will be for food, medical supplies, ammunition, and such stuff, and not the 75's and other heavy artillery pieces which they would have no use for anyway. If no effort were made to stop them, they would debouch from the jungle fringes on each side of the Canal Zone, meet at the objective, seize our airports, signal their own air forces to ride in, and in less than two weeks they'd have the Panamanian senoritas spikking two more languages beside the several they already know—at least well enough to say where and at what time.

That's if they are not resisted. Now let's run over the various approaches to the problem of stopping them. The Navy can't help (of course it could have scotched the whole thing initially by preventing the bridgeheads from which the pincers started, but remember that that's beyond the sphere of our hypothetical problem). True, they might bombard a narrow coastal strip on each side, but they wouldn't be able to see what they were shooting at. Same goes for the big guns and the Air Corps' bombardment squadrons. And the searchlights would serve only to keep the enemy oriented in the otherwise trackless, directionless wilds. The only weapons that will get those fellows are the good old .30 calibers, because that is the only fire that can be carried into the jungle to meet them. Also, it is the only fire that will pick them off as they approach an organized line of resistance.

Some of the theorists down here figure that the best defense would be to organize a field of fire just outside the jungle and then sit back and wait for 'em. Shoulder weapons would receive the heaviest part of such a mission, because internal small-unit maneuver is highly important in the modern style of even the most stabilized type of defense line.

Certainly there would be many points where a machine gun could be sited to advantage.

Other brass hats, influenced by the failure of France's stable defenses against Germany's flanking movement through the Low Countries, think that such a maneuver should be met by a force which would plunge into the jungle to meet the attackers, and destroy the enemy with the type of open warfare which Black Jack Pershing used to close out the 1918 preview of what's happening now.

But no matter which plan you favor, you've got to do the job with rifles. And believe me, on that little point we're *ready*. Just as ready as we are with the Navy, the big guns, the searchlights and the airplanes. I haven't even a fairly good guess to give as to the number of riflemen now in the Zone, and even if I did it wouldn't be cricket to state it. But I can say first-hand that there's plenty of woods and mountains around Gatun Lake, and them woods is full of sojers.

And when and if the time comes to play that little game for keeps, it's going to be pathetic. Our boys all have M-1 rifles, with more than double the fire power of the bolt-action type. Their situation as to supply would be vastly superior to any the enemy could develop, for reasons too obvious to need discussion. They are jungle-trained, with the immense advantage of maneuver over known terrain and greater convenience to bases of operations. It would be just like one gang with Tommy guns fighting another with sling-shots.

Of course, we have a mobile field artillery force down here, too, which would be good for some support anywhere on the Isthmus, but any land action will be decided by the fire of the rifles along the big ditch.

It's a great comfort to be able to report that our generals have thought it through in a calm, level-headed manner, and have seen the need for preparation to meet this comparatively likely style of attack. They have gone on quietly, studying jungle warfare and training some of the Army's best soldiers in it, caring not a whit whether the newspapers play up their rifle defense plans or not. And the doughboys are here—thousands of 'em, trained down to a gnat's heel for a specialized job.

It wouldn't surprise me a bit to see the semi-automatic rifle get its baptism of fire right here at the crossroads. And I can't think of a better place.

SPEAKING OF QUAIL GUNS

By MONROE H. GOODE

WHEN EQUIPPED WITH THE RIGHT GUN and flanked by a brace of staunch keen-nosed bird dogs, bob white quail shooting is about as thrilling a sport as one can hope to find. While never arrayed in as gaudy plumage as the wily cock pheasant, nor capable of the corkscrew twists and darts of the adroit snipe, nor the meteoric speed of the blue wing teel, nevertheless bob white affords unlimited opportunities for spectacular performance in man, dog and gun.

Bob White loves civilization, and he thrives best in cultivated areas. Instinctively he prefers the open country, and he only seeks covert to thwart his enemies; whether found in open field or woodland, his frantic wings hurl him through the air so swiftly that it taxes the skill of any hunter to pull him down with any degree of regularity. When discovered, he rarely runs, as do his relatives of the West and Southwest, and he lies better to a dog's point than any other bird in existence. Without a doubt, he brings out the best qualities to be found in true bird dog greatness: bird sense, versatility, patience, keen scenting powers and persistence.

Bob white hunters need a gun that kills clean and instantaneously, one that is right in gauge, boring, barrel length, weight and balance, not so much for the purpose of securing bigger bags but to cut down on the havoc brought by anemic guns that annually send thousands of crippled birds scurrying into briar brambles and swamps to die a lingering death, a complete loss to the sportsman. Why it is that so many sportsmen seek a gun that will spray a gnat into eternity at 80 yards when the average killing distance on quail in covert is about 20, we do not know. Let's view the right gun as an implement of conservation.

Now the first question confronting the sportsman, though not the most important, is this matter of gauge; and we might say, parenthetically, that the load is about as important as the gauge. It is now possible to choose a load for the dwarfed 410 gauge that carries as much shot as the lightest load in the 12 gauge—both freak loads but of different extremes. But back to gauge. The trend for almost a century has been steadily toward smaller gauges, yet the 12 is the most practical from the standpoint of ballistics. The one rule that can never be refuted is that the larger the bore, within reason, the better the gun will pattern its shot, and killing power is dependent on pattern and velocity. Pressures and muzzle blast are less in a 12 than in the smaller gauges, and the velocities are higher. Muzzle blast plays havoc by spreading the charge, with the gas actually getting among the shot causing what is known as "blown" patterns—the shot tends to wad up and uneven "patchy" patterns are printed on the target. Mutilated or "gas-blown" shot will not fly as true as will perfect spheres, hence the pattern of a small gauge is not likely to be as good as the 12. Counter-balancing its superior ballistics, certain liabilities can be chalked up against the 12: more recoil, louder report, greater weight and bulk of both gun and ammunition; it is a slower handling gun than the light, racy, small bore and, finally, the fodder costs more.

The 12 is primarily a duck, goose, pheasant, and turkey gun, while the 16 and 20 are especially suitable for bob white, woodcock and snipe. The 20 is probably destined to become our most popular gauge for bob whites. Light, fast-handling, balanced to perfection, with negligible kick, and consuming cheaper and lighter fodder, it's the bob white gun par excellence. If, however, you insist on the 12, and are husky enough to swing it and can absorb its heel-caress, by all means choose one of those new "under-nourished," featherweight models; if you are none too robust or turn a double barrel flip every time a car backfires, select the 20, provided you are a better-than-average shot. If you elect to steer clear of the ponderous 12, and yet are not skillful enough to hit with the racy little 20, then you have but one choice left—the 16—which is our champion all-'round gun. The 16 has virtually the effectiveness of the 12 with almost the lightness and raciness of the 20, and weight and cost of hulls is midway between the two. Naturally, the 20 won't kill quite as far as the 16, nor can the 16 reach out like the 12, and yet the larger bore may tax the strength of the hunter, in which case he'll probably make more hits with the 16 or 20. But unless a marksman of first rank, the hunter should never go below the 20.

In the matter of loads, one will do well to stick to moderate shot charges: 1⅛ oz. in the 12; 1 or 1⅛ oz. in the 16; and ⅞ to 1 oz. in the 20, all in loads of standard velocity. The heavy loads would pummel your shoulder to no good purpose.

The most important factor about any shotgun is how well it patterns its shot. Sportsmen are chiefly concerned with the diameter of the shot spread and the uniformity of the shot distribution over the target at any given distance, for both the hitting ability and the killing power are dependent on these two factors. In all normal patterns, the shot will be a shade thicker in the center with noticeable thinning out toward the edges.

Anything to the contrary will certainly arouse our suspicions.

Naturally the pattern will vary slightly with different lots and brands of shells, different shot sizes and, incidentally, a badly pitted, leaded, or even a dirty bore will cause a gun to undershoot its normal capacity.

With many state seasons open to February first, this fascinating southern sport is still very much on the '42 calendar. Which gun is the best?

Two things cause a person to miss: either the sportsman is pointing badly or the boring of his gun is at fault. To be able to place the blame where it belongs, every shotgun must be checked for pattern and also for performance on the game. A careful test will disclose three vital features: size or diameter of the spread; the uniformity of the pattern; and whether the shot charge strikes at the proper place on the target. The quail gun should shoot high, as the bird is usually zooming into the air the instant the gun is discharged. That is why quail guns must be stocked to shoot slightly above the point of aim if they are to give a good account of themselves.

Choke gives us shot control, so perhaps we had better pause to analyze its prerogatives. Choke is the constriction of the bore near the muzzle which serves to concentrate the charge of shot on its flight through the air, to give a relatively small and dense pattern rather than a widely scattered or "patchy" one. Without at least enough choke to round out the pattern, the gun will fall short of its purpose, for no gun without some choke ever shot an even, well-rounded pattern. To secure the various degrees of choke necessary for different types of shooting, barrels must be constricted in varying degrees at the muzzle so the hunter may choose the choke or chokes best adapted to his particular type of shooting.

There is another angle to be considered. Obviously, it is easier to hit with a gun that throws a wide pattern than with a gun that shoots a narrow one, and the wider the pattern the more certain the hunter is of scoring a hit. For this reason, if he is wise, he will choose the most open bore that will carry a sure-fire killing pattern at the average distance of his shots. And thus *spread* is balanced against *killing power*, thereby affording ample spread to hit consistently and ample density to kill without mutilating. Of the two, spread comes first because you must hit before you kill—the shot that hits counts!

If you pause to ponder the matter you will soon conclude that the human element also enters into the picture. One person may require a closer-shooting gun than another for the same type of work because of the difference in time needed to get on the bird and to discharge the gun, and also how accurately it is pointed. Naturally the quick shot will select the more open bore gun than the slow pointer, because in the case of the former the bird will be closer at hand, and the closer the bird to the gun the more open the barrel must be, both to hit and to prevent mutilation. Further, if the hunter is handicapped with impaired vision he cannot see the birds as far as can the man with high visual acuity; hence, he is compelled to bag his birds at close range or not at all and close-range shooting calls for an open-bore gun.

Lambert, Philadelphia

A full choke gun will put about 70% of its pellets in a 30-inch circle at 40 yards: a good duck pattern but entirely too dense for quail at 20 yards. The small spread of a full-choke gun at 20 yards usually means one of three things: a clean miss, or the bird is wounded with the edge of the restricted shot charge or, if by a lucky fluke, the center of the charge happens to strike the bird, it is literally pulverized—there isn't enough meat left to grease the skillet—all debits.

The full choke is a complete flop as a brush gun. Not more than one person in a thousand can turn in a fair score on bob whites in the brush with a full choke, and what birds are recovered are too badly riddled to be edible, so the full choke is out once and for all. What is needed for use on bob whites in dense covert is a gun bored to give the same pattern at 20 yards that the duck gun does at 40; that is, a nicely rounded, even pattern about 30 inches in diameter, and this calls for an *improved cylinder* bore, the best choke ever devised for the open barrel of a double gun.

The sportsman who shoots bob white in thick covert with a double gun requires a first barrel that throws a wide enough spread to hit and yet dense enough to kill without mutilation up to 25 yards, which means *improved cylinder* (45%), and a second barrel that throws a spread wide enough to hit but dense enough to kill without mutilation at ranges between 28 and 34 yards. This spells *quarter choke* (50%) or *half choke* (55%). In the repeaters and auto-loaders, choose *quarter choke* (50%) or *half choke* (55%), closer choke being prescribed for the magazine guns because the hunter must often follow up the first shot with one or maybe two more, the distance increasing all the time. It is sound logic to bore small gauges closer than large ones. In the 20, this amounts to a spread 10 per cent smaller than the 12.

In thick covert, a bob white can get out of sight quicker than a monkey can take his hat off with both hands. For this type of hunting, we strive to match speed against speed and this is where the short barrel, featherweight gun shows up to best advantage. No man can do justice to his skill in dense covert with a long barrel, ponderous arm that balances like a crowbar. The long barrel has its place all right but its place is not in the brush, and we are not wolfing about that. It can be pointed more accurately than the short barrel, once you get on the bird, due to its longer sighting plane, but there's the rub: it takes too much time to swing and point a long barrel, and since there is nothing to gain in pattern, velocity or power with a long tube, why handicap yourself? A long barrel means regrets—a short one quail on toast! A long barrel kicks less than a short one, has less muzzle blast and report; but the added weight and bulk and length make it unwieldy and hard to manage. A long barrel shoots under and if the gun is heavy as well as long, it shoots both *under* and *behind*. Conversely, a short barrel swings faster and more easily,

shoots higher, and gets on the bird quicker than a long one. Therefore, let's choose a light, fast-pointing barrel of 26 inches and have it over with. Light, short-barrel guns are a new wrinkle in this country but they have been widely used in England for nearly three decades.

The problem of weight is important from two angles: in the first place a heavy gun increases the hunter's fatigue, decreases his miles and enjoyment. In the second place, light weight, like short barrels, is a requisite to fast handling. A six-pound shotgun is two yards faster than a seven-pound arm, yet it is difficult to steer shooters away from ponderous weapons. For decades gun-makers have encouraged the use of heavy guns, as it is easier to build a strong, heavy, cheap gun than one equally strong but light—ultra light guns call for better steel and better workmanship. The small gauges are just as much overweight in proportion as the 10 and 12 gauges. Some persons foolishly tolerate a heavy quail gun on the theory that it neutralizes recoil. A simpler and better way to do the job is to slap on a soft rubber shock absorber on the butt of the big bruiser, but unless you are very fragile, none will be required for the small gauges if normal loads are used.

The ideal weight for the double quail gun with 26-inch barrels runs something like this: 12 gauge, 6½ to 6¾ lbs.; 16 gauge, 6 to 6¼; and 20 gauge, 5½ to 5¾ lbs. Pumps and automatics, except the new Ithaca Repeater and the new Savage Auto-Loader, neither of which weigh more than a sack of popcorn without syrup, will exceed these figures considerably.

The veteran can do fairly well with most any shotgun, unless it's down-right gosh-awful, but he'll never reach the higher brackets without reasonably good fit—fit is essential to superb performance. To the sportsman who gets limited shooting, shotgun fit is important—twice as important as good fit in a rifle. This is true because the average shooter points his shotgun more or less instinctively, hence he relies more upon feel, balance and position of the gun. The smooth-bore fan is a quicker shot than the rifleman, which means that he has less time to adjust himself to the gun and less time to point the gun; and under such stiff handicaps he's almost sure to turn in a punk score.

Different types of shotgun shooting call for various stock dimensions. A straight stock; that is, one with minimum drop at comb and heel, shoots higher in relation to the line of aim than a crooked one, and it is best for trap shooting. Skeet calls for a trifle more drop; quail guns need still more drop; and rabbit guns are made with the most drop of all, as the bunnies are on the ground, or supposedly, and not soaring in the air like birds. Short barrels also accentuate the drop and cause the arm to shoot higher than long ones, as previously mentioned.

The drop at comb can be increased by installing a raised rib or by changing the angle of pitch, but pitch should never be used to fix elevation, as such adjustment can only be correct when the gun is fired always at the same angle. A long toe shoots low and vice versa. Sportsmen should be reminded that there must not be too much drop between comb and heel.

The short-armed man will need a shorter pull than the long-winged fellow. If the stock is very short it will make the gun feel clumsy. Inasmuch as tall men often have short arms, and short men sometimes have

Lambert, Philadelphi

long arms, the length of the pull is based on the length of the arms, not on the height. Short, crooked stocks not only increase recoil effect but tend to sock the face. Long, straight stocks take the sting out of recoil, soften the jab to the face, and put the heel-thrust on the shoulder where it belongs. Take your choice. It is better that the stock be too long rather than too short, but don't go hog-wild on the matter of length, as the butt of an extra long stock will catch in the clothing as you swing the gun to your shoulder, and this is fatal to fast work.

The function of the butt plate is to furnish a good bearing surface against the shoulder, which is necessary to the proper distribution of the recoil over the entire shoulder—not against the thinly muscled upper part of the arm, where it will severely punish the shooter—and to help the sportsman absorb that recoil. If only the toe of the gun strikes the shoulder, leaving the heel sticking up above the shoulder, either the stock does not fit or else your holding is at fault, or both.

The contour of your face has a strong bearing on shotgun fit. The pudgy, round-faced, butter-ball type of man, or one with lantern jaws, needs a thin comb to prevent crossfiring; the fellow with a long, thin face will require a thick comb to prevent cross-firing in the opposite direction. It is not the function of the cheek rest, a useless appendage on shotguns, to alter the width of the comb. A cheek piece adds swank but not utility.

Shoulder-width affects gun-fit. There is nothing mysterious about this. It's purely a matter of stocking the arm to permit the hunter to look down the barrel or rib without tying a knot in his neck. A broad shoulder calls for ⅛ or even ¼ inch cast-off to bring the center of the rib in line with the eye; women and narrow-shouldered men may require an equal amount of cast-on to prevent the gun from extending too far over.

A pistol grip is an asset on a single-trigger trap or skeet gun where the shooter always places his hand on the tang before calling "pull" as the pistol grip tends to prevent canting; but in rough-and-tumble brush shooting, the matter of canting is usually ignored, and the pistol grip may even slow you up a bit. On the contrary, no pistol grip, regardless of how well designed, could help steady the trigger finger on a two-trigger gun. It might be exactly right for one trigger, but surely not for two. The pistol grip is a definite handicap on two-trigger guns. When shifting from one trigger to the

other, a pistol grip can confuse you and cause you to lose a split-jiffy of time when you can ill afford to do so. To a man who knows gun-flesh, a pistol grip on a two-trigger gun is about as popular as a hot dog vender at a Russian caviar banquet. Don't forget that the width of the hand and the length of the fingers have a bearing on the size of the tang and the location of the pistol grip, as well as its shape.

Skimpy forearms that give a cramped, insecure grip, instead of a solid comfortable one, went out with Corbett. The best type of forearm for any kind of work, except trap shooting, and maybe for that also, is the streamlined, medium-full forearm found on our latest skeet guns, which not only affords a good, comfortable grasp, which helps to reduce recoil effect, but which also protects the supporting hand from hot barrels.

Current opinion is that the mythical, so-called "average man", if a keen marksman and quick shot, can turn in a creditable performance on quail when using a gun stocked to these dimensions: length of pull, 14 inches; drop at comb, 1½ or 1⅝ inches; drop at heel, 2¼ or 2⅜ inches; pitch, 1 inch. The short-armed man will do better work with a 13¾-inch stock, and the long-armed sportsman will require 14¼ or even 14½ in length.

Our tip on shotgun fit is not to get yourself married to any stock until it has proved its value over a long period. As you gain experience, you will find yourself shooting a straighter stock.

In the double gun, you will, of course, want a selective single trigger as the best ones are now essentially fool-proof and perk as they never perked before. A single trigger does make for a quick second shot, prevents fumbling in going from the one trigger to the other, and is conducive to better shooting.

Naturally, you will insist upon automatic ejectors, always found on the best grade of double guns. A double gun without automatic ejectors might be compared with a car without a self-starter—the job can be done by hand but there's no fun in doing it.

If you wish to cash in on the hard-earned knowledge of other quail hunters, you'll stick to short, light, well-balanced guns in 16 or 20 gauge, bored to shoot a wide, killing spread at 18 to 35 yards. There must not be too much difference in the boring between the two barrels of the double. It would be folly, typical of the dub, to choose a gun bored cylinder and full choke, which would be comparable with teaming up a spirited race horse with a phlegmatic jackass.

SIMPLIFIED BLUING

THE CONVENTIONAL MANNER of bluing steel, especially the hot water process, is complicated for the amateur because of the absolute degreasing necessary. The cold rusting process is too slow in most cases although it produces a most lasting finish. There is another simple method, often mentioned in books on bluing, but seldom reviewed, which aroused our enthusiasm, mainly because of its simplicity and economy.

The simple formula was suggested by an air pilot who spends his spare time as an amateur gunsmith and tool maker. After learning commercial Sodium Nitrate could be purchased at 3 cents per pound from the local feed and fertilizer store, and ordinary lye economically at the grocery store, we soon had the main ingredients for our bluing solution. Later a small quantity of slaked lime was purchased, although not used in the recommended formula.

The main outlay was for a black iron (16-gauge) tank 40 inches long, 5 inches wide, and 8 inches deep to hold this rather violent solution which boils and blues at 285° to 320° F. Degreasing is unnecessary as the lye takes care of that phase of bluing. Merely polish the parts or reblue without polishing or removing worn bluing, providing the steel is not rough or pitted. Bluing will not take over rust spots.

The formula consists of 1 part Sodium Nitrate, 2 parts lye or caustic soda, and 2 parts by volume of water. Our final solution consists of 7-lbs. nitrate, 14-lbs. lye and ½-lb. slaked lime, the latter to regenerate the caustic alkali and restrain the formation of carbonate. The solution should last indefinitely by occasionally adding a can of lye.

Boiling and bluing temperature is controlled by the amount of water added. A thermometer is important, although not necessary. The local dime store supplied the 25-cent Deep Fat frying thermometer which was found entirely practical as it has a temperature range up to 450° F. Without the thermometer one soon learns that the solution is boiling at too high temperature when the parts come out with a heavy rust coating over the blued finish. Too weak a solution will leave a thin, streaked finish.

Experience indicates it is best to add sufficient water for the solution to boil at 285° F. or less before the polished parts are immersed. Then turn down the gas flame so the solution merely bubbles. Leave the parts in until the temperature goes up to at least 315° F. At this point they should be completely blued, but a deeper, almost black finish is obtained by holding the temperature at 310 or 320 degrees for at least 15 minutes. This is accomplished by adding water slowly and cautiously as the solution is very violent when cold water is added, and will destroy almost any material it touches except iron or steel, though it does not cause after-rust.

Should red dust appear the only answer is to rinse the parts with hot water, scrub with fine steel wool or a stiff bristle brush, rinse again, and reblue after first lowering the boiling temperature. When the job is finished, rinse in hot water, wipe dry and scrub rather vigorously with fine oiled steel wool. Wipe the bore dry and oil, as it has been blued also.

This solution will attack non-ferrous metals, especially if left in too long. However, relined barrels and soldered shotgun barrels were not affected while in the bluing tank. Its action on soldering is apparently very slow.—A. H. BARR.

BULLET FIT

By Ludwig Olson

Of all the subjects relating to the grooved tube, bullet fit has been the most mysterious. About all we hear on the subject in this country is that bullet and groove diameter should be the same in the case of metal jacketed bullets, and lead alloy bullets should be slightly larger than groove diameter. Such a rule is excellent when applied to our modern American rifles of conventional design. However, it does not by any means apply in all cases.

Bullet fit is associated with that part of interior ballistics known as "forcement". In plain terms, this word "forcement" means the energy necessary to drive a bullet through the bore. "Forcement" energy must be in a definite ratio to other forces imparted within the gun when it is fired. For instance, if bullet fit is too tight, breech pressures will take an abnormal jump upward, and the "ballistic balance" of an otherwise normal load will be destroyed.

Col. J. S. Hatcher, in a 1921 "Arms and The Man" article, gave an example in which it was entirely proper to have groove diameter exceed bullet diameter. In this article Col. Hatcher cited the example of the German 7.9mm. military Mauser chambered and bored for model 1905 spitzer bullet ammunition. The land diameter of the 7.9mm. is .311″ and the groove diameter is .325″. The bullet diameter is .323″, or .002″ smaller than groove diameter. Grooves of this 7.9mm. bore are .007″ average depth, or .003″ deeper than our .30-06 grooves. Col. Hatcher gives a universal rule for bullet fit in high power barrels with four narrow lands and four wide grooves, as is general in the German Mauser and modern American .30 caliber bores. In such bores he says that bullet diameter should be .0015″ to .002″ greater than the land diameter plus ¾ of groove depth, times two.

Example I. (.30-'06)

.30-06 bullet = .308″ diameter
" land diameter = .300″
¾ of .30-'06 groove depth = .003 × 2 = .006″ + land diameter = .306″

Thus, we see that the "effective area" of the .30-'06 bore is .306″, or .002″ smaller than bullet diameter.

Example II. (7.9mm.)

7.9mm. spitzer bullet = .323″ diameter
" land diameter = .311″
¾ of 7.9mm. groove depth = .00525″ × 2 = .01050″ + land diameter = .32150″

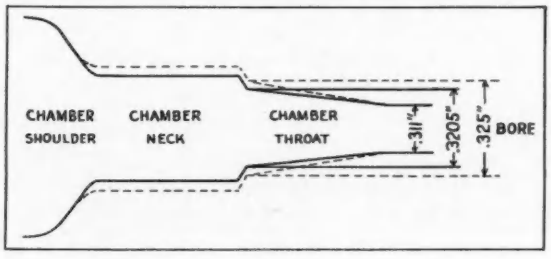
Here we find that the "effective area" of the 7.9mm. bore is .32150″ or .0015″ smaller than bullet diameter. This is well within the prescribed rule, and only .005″ short of .30-'06 National Match standards.

Example III. (.303 Lee-Enfield)

The .303 British Lee-Enfield bore is another example of groove diameter exceeding bullet diameter by .002″. The Lee-Enfield groove diameter is .313″ and bullet diameter is .311″. Groove depth is .0065″, so that land diameter is really .300″ instead of .303″. Probably the land diameter was .303″ when this caliber first came out in 1888 with the Metford, segmental type rifling in the Lee-Metford rifle bore. The Enfield type rifling, five lands and five grooves of equal width, was adopted to increase barrel life against erosion. A bore with five lands and five grooves of equal width will give greater resistance to a bullet's passage than the American and German four narrow land, four wide groove type. This is the chief reason why Enfield model-1917 .30-'06 bores have groove diameters of .310″ for a bullet of .308″ diameter.

Only when comparatively shallow grooves of great width are employed can the bullet and groove diameter be the same. This is the manner in which all modern American high power barrels are rifled. The practice has been followed in this country because greater accuracy and less erosion from high pressure gas escaping around the bullet result in bores so rifled. This superior accuracy is due to three reasons: (1) The bullet is less deformed because it does not have to expand in order to fill the grooves and thereby "obturate" the bore; (2) the bullet does not get as much chance to "yaw" or oscillate due to favoring one side of an oversize groove diameter; (3) any bullet metal displaced to the rear by the lands is less in quantity, and more evenly distributed than in bores with oversize, deep groove diameters. Less erosion in tight bores is due to the fact that less gas can escape between grooves and bullet *before* bullet base is expanded. However, this does not mean that a tight bore with shallow grooves will have a longer life than a comparatively loose bore with deep grooves. It is true that erosion due to gas escaping around bullet is greater in the loose bore, but this is only a part of the total erosion developed. The main body of high pressure gas behind a bullet erodes the low lands of the shallow groove barrel and causes the barrel's unserviceability much more quickly than in a loose barrel with deep grooves. The high lands of the deep groove barrel will also be worn

An ordnance modification for increased performance with maximum economy—the German 7.9-mm. Solid lines show chamber and bore as originally adopted in 1888 for the .317″ diameter round-nose bullet; dotted lines show metal removed in 1905 to adapt the rifle to the .323″ spitzer bullet ammunition



by the main body of high pressure gas, but there will still be enough land metal in the deep groove barrel to rotate a bullet long after the lands of the shallow groove barrel have eroded away.

Erosion caused by high pressure powder gases and metal jacketed bullets has undoubtedly been a big reason for the deep grooves of British and German military bores of high power rifle caliber. A slight sacrifice of accuracy was considered preferable to a barrel of comparatively short life.

Another plausible reason for the deep grooves of the German 7.9mm. caliber is given by Col. Hatcher in his 1921 "Arms and The Man" article. In 1905 the short ogive spitzer bullet replaced the long ogive paraboloid model of 1888 bullet in the German service. In altering the existing 1898 Mauser rifles for the new ammunition, the chief problem of this modification with economy was the suitable adaptation of the short ogive spitzer bullet to the long bullet seat of bores originally intended for the long ogive model 1888 bullet. To fit this spitzer bullet to such a long bullet seat reasonably well, it was necessary to deepen grooves from .3205″ to .325″ average depth, and make the new spitzer bullet of increased diameter (.323″). The chamber neck diameter was also increased to accommodate the new ammunition, and the chamber throat was changed to a more abrupt angle *without* increasing its length. Still another theory for increasing caliber 7.9mm. bullet and groove diameter, but not land diameter, was to give greater grip on the very short bearing 154-grain spitzer bullet, and thus prevent improper rotation due to bullet jacket "stripping".

Ross of Canada and Charles Newton of this country, both famous ballisticians and rifle manufacturers years ahead of their time, were great exponents of the oversize groove diameter. Newton also used segmental and oval bored systems in rifling many of his barrels. In addition, Newton and Harry Pope developed a type of "parabolic" or ratchet shaped rifling. Both Ross and Newton wanted to produce rifles of very high ballistic performance, and in most cases oversize groove diameters helped reduce breech pressures sufficiently with heavy loads of powders then existent to give desired ballistics.

In modern American sporting and military arms, it is significant that only the Enfield type of rifling with comparatively shallow grooves and a tight bullet fit has survived the test of time. This is undoubtedly the best system for target and sporting rifles where erosion is not such a potent factor. However, in military rifle and machine gun barrels the erosion factor is far more important, and it is problematical as to whether a shallow groove tight barrel is preferable to a deep groove, comparatively loose barrel.

The question stands as an unfinished job in the field of high power, grooved-tube weapons for military use. Somedav the right person or group of persons will carry on extensive experiments to learn what's what.

COMBAT EFFICIENCY OF THE RIFLE

"IN THE FINAL ANALYSIS, all rifle and machine-gun fire consists of groups or patterns of bullets which are placed as nearly as possible on the target. The smaller the groups and the more accurate the adjustment on the target, the fewer the shots required for a given number of hits.

"The process of bracketing a target in artillery fire, as in small-arms fire, is expedited by accurately delivered rounds. The bracket having been narrowed, fire for effect is then delivered until the target has been destroyed.

"No one seriously contends that accuracy in the delivered fire is not essential in artillery. Machine-gun fire proceeds on the same basis. The machine gun is adjusted on targets or on an area, and the controlled bursts are scientifically placed to obtain the maximum effect.

"For example, a machine-gun crew is ordered to fire on a road junction at 1500 yards. Enemy troops are using this junction. The machine gun is carefully sighted and all possible corrections for wind and elevation are applied. The machine-gun crew seeks a small, compact cone of fire. For distribution they traverse and search. But they do not loosen up the clamps and spatter bullets all over the landscape on the theory that a few shots are bound to hit the road junction.

"The same is true where a machine gun fires upon personnel; as, for example, on a column of troops on a road. The cone or pattern of fire is adjusted to coincide with the target.

"Thus, a rifleman firing upon an opposing enemy soldier follows the same process. Under certain conditions one shot may be enough per target. But for the most part the rifle makes a pattern or group which the rifleman endeavors to place upon the target. Out of so many shots, one will score a hit. The smaller the group, the greater the chance of a hit.

"In other words, for each rifleman there is an imaginary circle around his target. He shoots into that circle almost every shot. The rifleman's combat efficiency may be measured by the size of his circle or group and by the speed with which he can deliver the necessary shots required for a hit."—From *"Automatic Arms"* by Melvin M. Johnson, Jr. and Charles T. Haven, New York, 1941.

The ONE and ONLY ATOMIZER

By CAPTAIN T. K. LEE

CONSIDERABLE EXPERIMENTING has been done of recent years on the .30-'06 shell, necking it down to smaller calibers. Little success attended efforts by various gunsmiths and custom rifle makers. To develop a successful cartridge oftentimes requires literally scores of tests of various shapes, angle of neck, length and all the technical things connected with such.

Lyman A. McCrea designed this one. The neck is quite short and the shoulder just about disappears and becomes nearly flat. The idea being to confine the gases more or less and get the full force of explosion before much of it could start out the .22 caliber neck, thus lowering pressures and eliminating some of the destructive effect of erosion in the throat of the rifle barrel. As to what pressures it develops with the various loads tried so far I can't say, but they surely are normal as the usual indication of pressure by appearance of primers after firing, shows nothing unusual up to a load of 45 grains of 4064 behind a 55-grain .224-inch Sisk bullet or W-M 8S bullet of same weight. Forty-two grains seems a rather ladylike load, whereas 40 grains of 4064 and a 55-grain bullet in the .220 Swift is about tops.

The Atomizer shell will hold 49 grains of 4064 but I consider 46 grains with 55-grain bullet high enough to go. Limited tests so far indicate that the cartridge is very accurate, a minute-of-angle spread having been bettered consistently at 200 yards and equalled at 300.

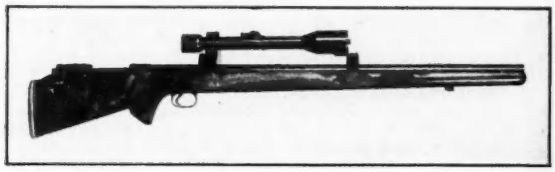
The 6X Zeiss Zeilechs is mounted offset to the left a half inch. Stith, the San Antonio mount maker, made up the special mounts as shown. The scope can be offset to left a half inch or moved to the opposite direction ¾ inch. A ¼-inch block in both front and rear mount can be removed which will lower the scope that much.

The most unusual piece of walnut, to which the photographs hardly do justice, is from McCrea's lumber pile. Wood experts vow this walnut must have come from far Siberia or wherever in Russia fancy Circassian is supposed to grow; but it didn't. Mac dug it up himself, literally dug the stump this piece came from, right off the street corner in his own home town.

It isn't an easy task to form these shells Mac says. Takes several dies and several operations. When loaded the best overall length with 55-grain bullet is 2.760 inches. This cartridge, it is claimed, will give greater velocity with .224 caliber bullets, will take a higher charge of powder, and yet the pressures will be less than those of the Swift and similar hot ones.

The complete outfit weighs 15¾ pounds. It is designed for a car gun, for crow and hawk shooting and, although the barrel is 30 inches long, the whole thing will repose on the seat of the car by the driver without crowding and is easy to handle inside the car with such short overall length. The muzzle is ribbed inward and the wood extends slightly beyond so it can be carried in the car with the muzzle down if desired with no chance to injure anything.

It balances superbly, and its thick cheekpiece gives perfect comfort in firing. The trigger is crisp (three pounds), and the made-over Enfield action works smoothly. Workmanship of McCrea is tops. At this writing, however, Mac is now in the Army, doing defense work, and no more Atomizers will come from his shop for the duration of the emergency. In fact, he has returned all jobs to would-be owners, since, as Mac puts it, "Uncle needs me more than the rifle boys." It's a novel thing to possess the one, and the only, Atomizer.



Two views of the McCrea "Atomizer" and (right), a 300-yard, 20 shot target. The load was the 55-gr. Sisk bullet and 40 grains of duPont 4064 powder

BRIDGEPORT, CONN., JAN. 1942

Rifle Remgt

WHAT HAPPENS WHEN YOU STAND UP ON YOUR FEET?

The Model 37 is as fine a performer from the offhand position as it is from the prone!

Many shooters become expert marksmen shooting from the prone position, which is as it should be. Things are different, though, when a shooter stands up on his feet. He doesn't have the good, steady elbow-and-sling support that the prone position offers. His gun seems to wabble all over the map. While good scores are harder to get in the offhand position, many shooters consider it the most interesting of all.

In the offhand position, the superb balance and design of the Model 37 really pay dividends in consistently higher scores! This gun, which arouses shooters' enthusiasm for its winning ways outdoors, is an all-round gun that is especially steady for the standing position.

Here, a natural, easy stance free from muscular strain is most important. The balance and proper weight distribution of the Model 37 make holding easy. Its tailor-made stock with a high comb fits perfectly against the cheek while its sharply checkered butt-plate nestles firmly into the shoulder.

Another important factor in offhand shooting is a fast trigger action, and smooth let-off. The "miracle" trigger of the Model 37 is crisp, velvety smooth in action, entirely free from backlash. Moreover, it's the fastest trigger ever built into a commercially-available match rifle!

The action is made of heat-treated steel, held to very close tolerances to eliminate variations in head space. Adjustable swivel, adjustable sights, and a new loading platform that does away with shaving of lead or lubrication contribute to the Model 37's outstanding performance. These features, plus fine workmanship, extreme accuracy, the strongest and fastest action ever built into a .22 rifle, proper design, and the right sight combination make shooters everywhere agree that the Model 37 is the world's finest target rifle.

Possibles and Impossibles

by **FRANK J. KAHRS**

In the mail the other morning we received two very interesting letters. They were from shooters who had just made 10-X possibles at 100 yards. These swell targets were made in practice shooting—outdoors, of course. In one case, the marksman referred to the kind of ammunition he used as being regular Kleanbore of the "garden variety." In the other case, the shooter said he used Kleanbore "Standard Velocity" ammunition. In case you're slightly confused, they're both the same thing—regular Kleanbore.

In the case of the second correspondent (and that's the real point here) one of the newer Remington target rifles—the 513T "Matchmaster" w used.

Incidentally, the 10-X group made with the 513T rifle occupied o about one half of the X-ring, and each shot cut into the other. A nic hides everything, and a dime leaves only half of one shot exposed. put a dime on an X-ring at about six o'clock, and you've got a pretty g idea of what this group looks like. The shooting was witnessed by t N. R. A. members, and you'll have to take our word for it that everyth in connection with this performance was on the up-and-up. We're pre proud of the way our regular Kleanbore ammunition came through h good, dependable target rifle that we recommend for beginners, clubs, a camps.

* * *

Reports are coming in from all over the country indicating the w spread interest in the organization of schools for instruction in rifle sh ing. There is nothing new about the idea, as rifle schools have been es lished from time to time in the past 25 years. Sooner or later th dropped by the wayside or failed in their purpose, for one reason or other. Generally, we believe, it was due to the fact that they were set-up to do the job properly. Many of these schools we found to nothing more than shooting galleries. You came in, borrowed a gun used your own. The school would set up a target, and you could w away. The man in charge would, if you asked him for information, tell something about setting your sights. Then you leaned against the coun rested one elbow comfortably thereon, and proceeded to fire away at target till you got tired. Then you went away, still wondering what it all about. Maybe you'd return some day, and if you did, you wer dyed-in-the-wool "nut." If you were just an ordinary human being y curiosity was satisfied and you stayed away. The "school" would eve ally fold up for lack of customers or "scholars."

The new schools are as different from these as night is from day. The set up differently, and really understand the fundamentals of rifle shoot Their students are given thorough instruction in all phases of the subj including training in the most basic principle of shooting—proper p tion—or form, we might have called it. Then the students are taught correct trigger squeeze, proper sighting, follow-through, and all that of thing. If and when this is all accomplished, the schools will be excel the pupils enthusiastic, you'll have successful shooters and more of th and finally, there will be nothing more to do, and life will be dull and w teresting. Ho-hum . . .

* * *

In our humble opinion, the office of the Director of Civilian Marks ship has never been more important than at this time. It seems everybody and his brother want to take up either rifle or pistol shoo Evidence of this is the large number of new faces that appeared at C Perry this year, and particularly in the school. More women are shoo than ever before. At no time in our memory has the office of Civ Marksmanship functioned more actively or completely than it has durin past few years, and particularly at the present time. That office has tainly accomplished a lot for citizens who are interested in target shoo

* * *

For many years past, it has been the custom to hold Olympic Game different parts of the world every four years. The games were suppos have been held in Helsinki, Finland, in 1940, but of course the war vented that. Now there are plans underway to hold the Olympiad in The world being in such a state of turmoil, one wonders where the g could be held with any assurance of success. Well, we have it on exce authority that the games will be held in South America, most l Buenos Aires. We are greatly interested in this, because plans are alr afoot to make the target-shooting part of the games very elaborate. soon as we have more information on the subject, we'll pass it on to So, until we make our final report, just hold everything.

"PALMA KLEANBORE", "RANGEMASTER", "MATCHMASTER", "TA[illegible]re Reg.

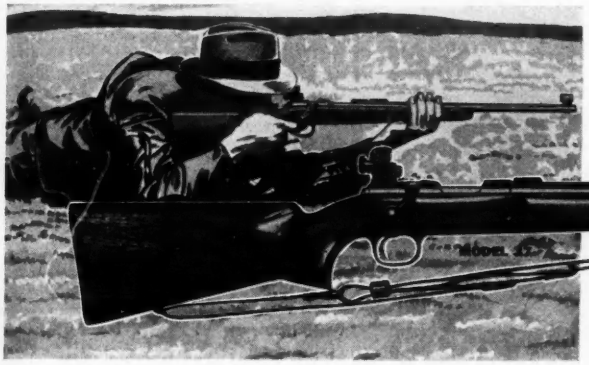
Remington News

A PAPER FOR PEOPLE WHO SHOOT

THE RIGHT COMBINATION OF RIFLE AND AMMO MEANS BETTER SCORES IN ALL FOUR POSITIONS

The unsurpassed Model 37, the extremely accurate Model 513T are versatile performers—and Remington match ammo keeps them shooting their best!

PRONE POSITION



One of the toughest testing grounds for equipment and ammunition is the prone position—for it's here that the "built-in" accuracy and performance of a fine rifle and highly dependable match ammunition turn a good score into a possible. In prone-position shooting, the winning combination of a Model 37 and Palma Kleanbore or Police Targetmaster often gives shooters the extra margin that wins over top-flight competition.

KNEELING POSITION

This is another position where balance is of the greatest importance. The Model 37 is a beautifully proportioned rifle that helps a shooter hold his position well, while the tight-grouping qualities of Palma Kleanbore and Targetmaster give him every possible break as far as ammo is concerned.

SITTING POSITION

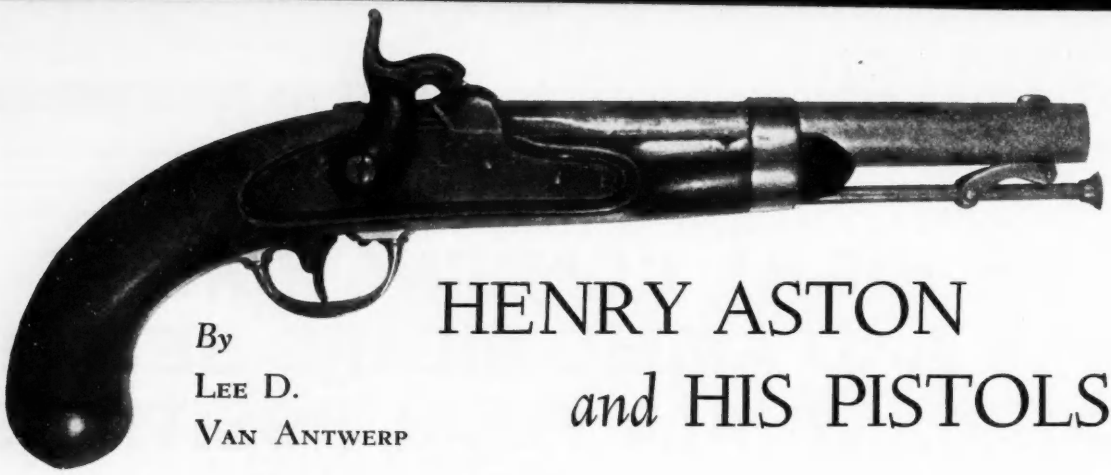
A lot of shooters consider this position equal to prone in steadiness. A Model 37 helps to get a good score here, because its stock is specially designed for steady holding, its "miracle" trigger goes off so smoothly and effortlessly that there is no perceptible backlash to throw a shooter off. Since a lot of shooters get high scores in this position, you need every possible advantage to make sure of a *winning* score—so shoot uniformly accurate Palma Kleanbore and Targetmaster ammunition.

OFF-HAND OR STANDING

The well-designed stock, the superlatively smooth and fast trigger pull of the Model 37 make it an outstanding winner in many offhand matches, too. Another Remington rifle, the reasonably priced Model 513T, used by clubs, colleges, camps and the like, is also extremely well adapted for four position shooting. It's a comfortable, well-fitting gun with a high comb, pistol grip, and wide butt plate. Its trigger action is smooth and fast, and the gun is a general all-round performer. . . .

Whatever position you shoot from, remember that you'll shoot your best with rifles and ammunition to which Remington research has given the superlative accuracy and uniformity that mean winning scores.

re Reg. U. S. Pat. Off. by Remington Arms Co., Inc., Bridgeport, Conn.



HENRY ASTON *and* HIS PISTOLS

By
Lee D.
Van Antwerp

The Letters and Contracts of An Early U. S. Arms Maker

Recently the writer experienced the rare good fortune of stumbling onto that bonanza of all antique arms collectors: the papers and records of an early manufacturer of arms. He therefore offers here the essence of those records for the information of the arms fraternity, not because the arm itself is so very unusual, but rather because the records are so complete as to offer accurate authority concerning numbers and cost of the pistols, and of the organization of the business itself.

The papers themselves consist of about 185 items, contracts, miscellaneous letters, inspection certificates, repair part orders, and partnership agreements. They were found in Henry Aston's old desk in the house he completed in 1829 in Middletown, Connecticut, and were in the possession of his daughter, Miss Ada Aston, who has graciously made them available for study. They had not been touched for many years, and to accent how little they had been disturbed, it should be said that almost all of them were still encased in their original envelopes and tied in neat bundles. In addition Mr. Aston's personal account book was found among them.

Henry Aston himself came to the United States in 1819 or 1820 in the company of his father, having been born in London, England, December 2, 1803. His grandfather had been a gunsmith, and it is likely that his father was also, as it is known that he worked for N. Starr & Son after coming to Middletown. The following story of his coming to Connecticut, although not authenticated, is believed correct, and is offered at its face value. After a time in New York, neither father nor son was impressed by the new world and had determined to return to England when Simeon North went to New York in search of a gunsmith capable of satisfactorily engraving the presentation pistols which had been authorized by the State of Connecticut for Commodores Isaac Hull and Thomas McDonough.

In New York he inquired for such a man of Peter Cooper, founder of Cooper Union, and was told of a young gunsmith who might do the work but it was thought that he might have returned to England. North found him with his father in a hotel, however, and persuaded both to return with him to Middletown. There they found a thriving center of arms manufacture and stayed. The presentation pistols mentioned are to be seen illustrated in S. N. D. and Ralph H. North's book, "Simeon North." These pistols were completed in 1820, and although Aston would have been but seventeen at the time, he may have been quite capable of doing the beautiful work shown, since he had been working as an apprentice and gunsmith for several years in typical old-world custom. Charles Winthrop Sawyer says that he had been apprenticed at the age of eight.

On arrival in Middletown, Aston entered the employ of Simeon North, later working for N. Starr & Son, and perhaps others. He was employed by Starr at the time of entering business for himself in 1845 when he obtained his contract from the government. This contract was completed in 1852 when he and his other partners sold the business to Ira N. Johnson, one of the partners. Apparently the contract was profitable as he did not find it necessary to again find employment, and lived quietly in Middletown until 1864 when he was suddenly taken ill, apparently with pneumonia, and died within three days, on January 27, 1864.

The War Department first heard of Henry Aston, as far as we know, in 1843, when he appeared in Washington with a letter of introduction from N. Starr & Son.

"Middletown, Conn.
Lt. Col. G. Talcott Octr. 16/43

Dear Sir

The bearer of this, Mr. Henry Aston of this place, visits Washington for the purpose of exhibiting a newly modeled arm which he has been engaged in putting up & which has been very favorably thought of by many in this vicinity.

We take pleasure in stating that Mr. A. is a gentleman every way worthy of confidence & has had very considerable experience in the manufacture of arms.

We remain very respy
Sir Your Obt Sts
N. Starr & Son"

On the back of the letter are found two endorsements: the first, "N. Starr & Son/ Middletown, Conn./ October 16, 1843/ Introducing Mr. Aston/ who has a new kind/ of Lock for Carbines"; the second is found beneath the first: "Ord. Office/ 21 Oct 43/ I have examined the lock/ of Mr. Aston. It is simple/ & ingenious & is worthy/ of notice. G. Talcott/ Lt. Col. Ord./ To the Secretary of War." Ingenious as the lock may have been, it most probably never came to further attention as we have seen no other mention of such made by this man.

Next comes the story that Aston had seen an advertisement in a New York paper that contracts for the manufacture of the Model 1842 pistol were to be let by the

Government. This advertisement he answered and submitted a bid which was subsequently accepted. On January 3, 1845, he was notified that he would be awarded the contract as follows:

"Mr. Henry Aston
Middletown
Conn. Ordnance Office
Washington, 3 Jany 1845

Sir

The Secretary of War has accepted your proposal to furnish Thirty Thousand Pistols at six dollars & a half each to be delivered during the next five years conformably to the advertisement on which this proposal was based. The contract will be prepared shortly & it is desirable to arrange previously the prices of appendages etc. upon which subject I shall be glad to hear from you as early as practicable.

I am Sir, Respy
Your Obdt Svt
G. Talcott
Lt. Col. Ord."

On receipt of this letter Aston and his partners immediately set about organizing the company as evidenced by the contract illustrated. In regard to Aston's partners, many errors have been printed concerning names and the time of their entering and leaving the business. The list below is complete and is supported not only by this arrangement but by later ones dated in 1850 and 1852, and by land records of the property where the "Old Pistol Shop" was located. With the exception of Nelson Aston, who was a half-brother of Henry Aston, all of the partners remained in the business until its dissolution in 1852. Nelson Aston withdrew from the partnership on May 21, 1850, as shown by the land records and by Aston's personal account book. On that date he paid to Nelson Aston $400.00 which presumably represented one-fifth of his share in the business. Peter H. Ashton, which is frequently misspelled "Aston," was, of course, no relation.

Between January 24th and February 3d the six men filed joint deeds to the property where the plant was to be built, a few miles southwest of Middletown on the Coginchoug River, where water power could be made available by the building of a dam. On February 10th he became a little anxious concerning the arrival of the contract and wrote about it, receiving the following reply which infers that Governmental affairs moved slowly even in those days.

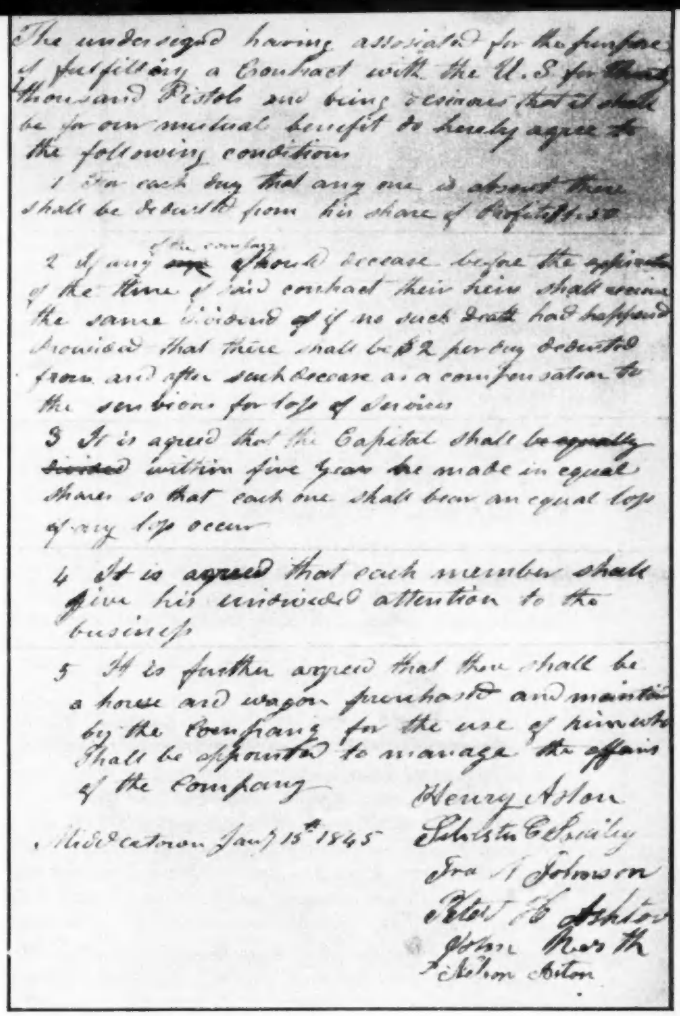
"Mr. Henry Aston
Middletown, Conn. Ordnance Office
Washington, 15 Feby 45

Sir

Your letter of 10 inst was recd this day—you were informed on the 3rd ult that your proposal for pistols had been accepted. It has not been in my power to prepare the necessary contracts for signature but it will be done as soon as possible & the delay of it should be no hindrance to your proceeding with your preparations for fulfilling your engagement.

I am Sir, Respy
Yr Obt Svt
G. Talcott
Lt. Col. Ord."

The contract arrived about two weeks later, being dated February 25, 1845, and called for the production of 30,000 of the Model 1842 pistols. As regards the other makers of this pistol it should be said that a few models were made by the Springfield Armory, and in quantities by Ira N. Johnson and by the Palmetto Armory. There is little or no evidence to support the others listed by Sawyer in his book "United States Single Shot Martial Pistols"; certainly none to support all the other Astons he has listed.



The original contract between Henry Aston and his partners for the manufacture of the 1842 pistols

As regards the much-discussed change in marking on the Aston pistols, the change from "H. Aston" to "H. Aston & Co.," which appeared in the fifties, it is likely that this was simply an identifying mark to distinguish those made after Nelson Aston withdrew from the business.

On April 16, 1845, the Springfield Armory was directed to send Aston a model pistol as shown by a letter to Aston found in the collection. The building of the plant progressed and on January 26, 1846, he was notified by Lt. Col. Talcott that "Capt. Thornton has been instructed to provide, as he does for the arms of other Contractors, the ammunition called for in your letter of the 21st inst." Apropos of this ammunition we have found shipping lists covering a period from Oct. 22, 1846, to May 27, 1852, for a total of 2900 pounds of powder, 2400 pounds of half-ounce balls and 52 reams of wadding paper. Since the charge for these pistols was fifty grains of powder for each half-ounce ball, this would provide roughly eight test shots per pistol without ball, and a little over two shots each fully loaded, enough to satisfy even the most avid of modern black-powder burners. Apparently Aston supplied his own percussion caps, no small item in itself, since well over three hundred thousand were used.

The first shipment was made on October 13, 1846, and consisted of 750 pistols and appendages. The price of each is shown as it was on all inspection certificates, the price for each being the same on all shipments as was the proportion between the number of pistols and appendages.

750 Pistols @	$6.50	$4875.00
750 Spare Cones @	.08	60.00
375 Screw Drivers @	.25	93.75
60 Ball Screws @	.12	7.20
30 Bullet Moulds @	.50	15.00
30 Spring Vices @	.35	10.50
15 Packing Boxes @	4.00	60.00
Transportation		2.70
		$5124.15

Concerning the checking of the shipments it is possible to speak of them with absolute accuracy as each delivery is covered by three documents: the original inspection certificates, a notice from the Ordnance Department that payment for the shipment had been requested, and a letter accompanying the treasury draft in payment. Since these fell but a day or two apart they are easy to associate and missing items show readily. A check of this sort reveals no missing inspection certificates and but five of the letters from a total of seventy-six.

The first shipment was inspected by Joseph C. Bragg, and since the initials of these government inspectors appear on various other arms, a complete list may be interesting to collectors. There are eight other inspectors who signed the various certificates as follows: George W. Hamlin, Stillman Moore, George Wright, Joseph Hannis, G. W. Patch, S. Knows, John Hawkins and James P. Chapman.

The contract was executed apparently in all good will on both sides, though once or twice minor criticisms arose as shown in some of the letters. In a letter from Capt. W. A. Thornton dated April 7, 1848, he warns of some defects "needing correction—viz: Corner off stock near cone seat—edge of lock plate cut with file—guard plate thin and narrow in front of trigger—band making a good joint with barrel in front but open in the rear—lock plates having cinder holes exterior and wanting some more polish finish interior."

Although the original contract was for thirty thousand pistols as stated by many authors, it has not become generally known that an additional three thousand were ordered, making the total number made by Aston thirty-three thousand. This order was conveyed in a letter and not in the usual contract form and the letter is shown below. These 3,000 pistols were obviously furnished the Navy from War Department stores and accounts for the fact that Aston pistols are not found bearing the customary anchor which marks goods made for the Navy.

"Ordnance Department
Washington, May 27th 1850

Mr. Henry Aston
Middletown, Conn.

Sir

You will please make for this Department three thousand percussion pistols, in addition to those to be furnished by your present engagements. They are required to replace that number supplied by this Department for the use of the Navy.

Respectfully
Yr Obt Servt
G. Talcott Bt Brig. Gen.
Col. of Ordnance"

The 33,000 pistols and appendages were delivered in thirty-eight shipments as follows, the last on Oct. 5, 1852:

Year	*Shipments*	*Number*
1846	2	1500
1847	6	4502
1848	7	5250
1849	9	6750
1850	4	5100
1851	6	6000
1852	4	3898

As early as 1850 plans were made to dissolve the partnership on completion of the contract, as shown by the following agreement. It is not signed by Nelson Aston, one of the original partners, as he had left the company the previous May 21st.

"It is mutually agreed by the undersigned that they are released from all obligation to each other as a company after the completion of the present contract and are at liberty to seek their individual interests in every way not inconsistent or in any way interfering with the completion of the contract aforesaid. And it is further agreed that if in pursuing their individual interests as aforesaid any one or more of the undersigned shall obtain a contract from the U. S. for the manufacture of arms, those of the undersigned not interested in such contract shall convey to the party holding the contract all their right, title and interest in the property now held jointly on receiving from the same the sum of Three Thousand Three Hundred Dollars.

It is further agreed that the party holding a contract as before mentioned shall have the privilege of commencing any work in the Establishment now owned and occupied by the undersigned which may be necessary to ensure its success but allowing two 25/100 Dollars per Day for lost time but not in any way either by doing work or losing time to interfere in the least with the rights of the party interested only in the completion of the present contract.

Middletown, Oct 19th 1850

Henry Aston
Peter H. Ashton
Silvester C. Bailey
Ira N. Johnson
John North"

As the result of the above agreement one of the partners, Ira N. Johnson, entered a bid for an additional contract which was awarded him March 28, 1851. His contract called for 10,000 of the Model 1842 pistols at $6.75 each, twenty-five cents more than received under his predecessors' contract. According to another agreement between the partners dated a week before, and obviously after Johnson had been notified that he would be given the work, he agreed to take over the plant but was to pay each partner a thousand dollars and twenty-one cents on each pistol he made. Since the original contract was not completed until well over a year after the date of Johnson's contract, the partnership remained in status quo until that time.

A last agreement between the partners is dated November 4, 1852, and testifies that each has received his share of the "money, effects and property belonging to the said copartnership. It being understood that the books and papers of the said copartnership are deposited for safe keeping with Ira N. Johnson and are to be accessible to the parties for reference and examination at all reasonable times." This last accounts for our not finding the records of the business with these papers.

Thus ends the story of Henry Aston and his pistols, a man who made but one arm, did it well, never made presentation or cased specimens, and retired in time to enjoy the fruits of his labors. His total contract, including the appendages to the pistols, brought the company $225,593.80. In addition they received at least $1262.31 for repair parts, a total of $226,856.11, a very comfortable figure for those days, even when divided by five or six.

THE ANSWER TO A PROBLEM

By CAPTAIN GEORGE VAN ORDEN*

POSSIBLY the most difficult fundamental of marksmanship to get across to shooters is sighting and aiming—difficult, not because the subject is hard to explain, but difficult because the *precision* required for good results is hard to *demonstrate*. No one not an excellent shot can appreciate the *absolute* precision necessary in aligning the sights if obscure or distant targets are to be hit.

Instructors in marksmanship continually stress precision. It is a by-word of the rifle range that nothing is *almost* right; it must be either 100% correct or all wrong. But what is "100% correctness?" Until the instructor can *demonstrate* to the student the difference between "100% correct" sight alignment and "almost correct" sight alignment, the student will surely fail to appreciate the degree of precision that the instructor speaks of when teaching sighting and aiming.

Up to the present, the standard equipment for demonstration has been the familiar sighting bar and triangulation gear. Unfortunately, while the sighting bar demonstrates the *theory* of correct sight alignment, it does not give a *true* picture of the sights of a rifle aligned on a target. It looks *something* like rifle sights in alignment, but when the student comes to actually looking through his rifle sights at a distant mark he finds a job on his hands far more difficult than aligning the parts of a sighting bar. The peep sight is not nearly so large and clearly defined; the front sight is not nearly so broad and sharp, and the bullseye is a tiny dot compared with what he saw on the sighting bar.

To align the sighting bar is easy; to align the rifle sights is difficult. The degree of precision required for the accurate delivery of fire has not yet been demonstrated to the student: the student is unable to comprehend the degree of precision required, and so, human nature being what it is, he is satisfied with an alignment that looks "pretty good."

The instructor expects to catch those men who align their sights "almost right" through the results attained in the triangulation exercises and through the immediately preceding second sighting and aiming exercise. But can he catch them and correct their faults?

Let us follow through on these exercises and see what happens.

In the second sighting and aiming exercise, the instructor aligns the sights of a rifle, held in a box, on a mark. He then moves aside and has the student view the alignment. The instructor then moves the rifle out of alignment and has the student realign the sights; the instructor then checks the results.

But, in moving back and forth, the instructor and the student must be careful not to touch the rifle or the box or the alignment will be thrown out. And so the student must get behind the rifle in an unnatural position to take his looks: what he sees probably doesn't look just the way the instructor described it (perhaps the student is holding his eye in a different position from that of the instructor when the sights were lined up), but as long as the instructor says "That is correct sight alignment," it must be so, even if there does seem to be a little line of white between the front sight and the bull, or some similar error.

In any case, the sights will not present the same picture when the student actually gets into his sling and into position with his cheek pressed against the stock and aims at a distant mark.

Now, when the student triangulates, he is to demonstrate to the instructor that he knows how to consistently aim in the correct manner. But the student quickly finds how difficult it is, by signalling and then shouting, to get the marker to move the sighting disc to the exact position he, the shooter, wants it to be moved to for a correct alignment. He decides, in short order, that if he ever wants to get the job done he'd better just be satisfied with an "almost right" alignment and call for a mark whenever the sights are "almost right." Besides, he knows from having himself acted as a marker how difficult it is to keep the aiming disc from slipping just a little bit when the shooter calls for a mark: if he does line up exactly right it probably won't be so marked on the paper. Anyway, he is in an unnatural position; he has to keep away from the rifle, otherwise he will throw the whole thing out of line, and have to start over again.

The Winter sighting bar allows a natural, down-on-the-rifle position. In this photo "Cal" Lloyd, famous Marine Corps coach, is using the device, with Captain Van Orden of the Quantico range as "teacher"

* United States Marine Corps, Commanding Rifle Range Detachment, Quantico, Virginia. Condensed from a paper prepared for Marine Corps use, July, 1941.

Making sighting triangles is a one-man job with the Winter sighting bar. Set up, the device may be moved without affecting relation of rifle to marking paper

A man gets mighty tired and loses interest pretty quickly trying to do something that won't come out right anyway, what with the box moving every now and then, and the signals failing to get the aiming disc moved just the way he wants it to be moved, and, anyway, that numbskull on the disc always moves it just before marking.

Besides, the shooter is *expected* to make a *triangle*, isn't he? Looks as if it's all right to make a *little* error, isn't it—otherwise a fellow would be required to put one mark on top of another. On top of all that, if the triangle is a little bit too large and the instructor doesn't like it, the shooter can always put the blame on the marker or something other than on his inability to get consistently good alignments. Did you ever find a shooter who would admit that *he* ever did *anything* wrong?

The upshot of the whole thing is that when the shooter reaches the range, he is very likely to be an "almost righter."

An "almost righter" can't shoot decent scores on the target range—therefore, neither will he get his share of hits on the battlefield. Any device that will help to eliminate these "almost righters" is valuable, but a device that is simple, durable, economical to manufacture and maintain, and easy to understand and use in training is a real find.

Such a device *is* available.

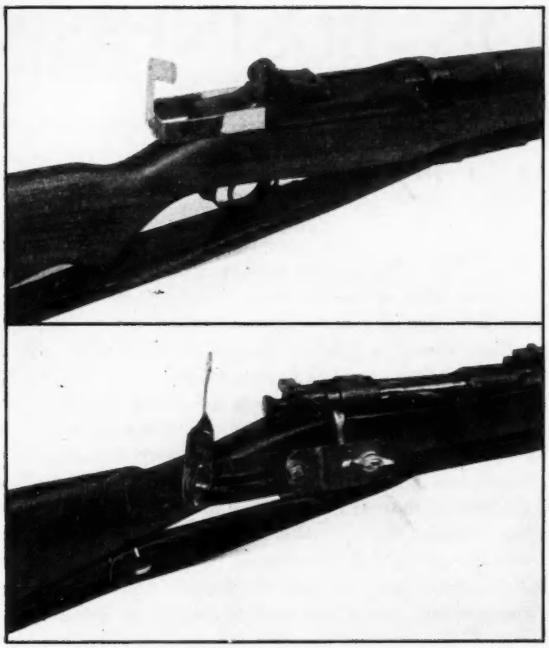
It is the "Winter Sighting Drill Target," devised in 1908 by Colonel John G. Winter, Calvary, Retired, and now in general use for the first time at the Marine Corps' Quantico Rifle Range. Forty-four of these Aiming Drill Targets were made by two range carpenters in their spare time during a period of one week, and the job included painting. Every part of the targets was made from scrap or materials on hand at the Rifle Range, with the exception of the mirrors, which cost ten cents apiece.

The Sighting Drill Targets were used in the sighting and aiming instruction of 750 recruits, and on their first day scores on the range were five percent higher than first day scores fired by men trained with the old equipment. One group, in their final qualification, attained a rating thirteen percent above the previous high for similar groups over the same course. The average of the 750 on firing for qualification when compared with similar groups shows an improvement of from three to nine percent.

There seems to be little question that the Winter Sighting Drill Target does a pretty good job of eliminating the "almost righters" when it comes to sighting and aiming. What does the Winter Target have that makes it so superior to the old equipment?

An examination of the pictures will make some of the advantages apparent. In general, the Winter Target consists of a long bar, at one end of which is a rifle rest and a recording board, and at the other end, a mirror. The rifle rest is arranged so that an M1903, an M1917, one of the caliber .22 rifles or an M1 rifle may be clamped into position, and pointed at the mirror. The recording board, close to the right hand of the student, is equipped with a yoke on the front side of which is attached a miniature target. The rear side has a small hole drilled through the wood through which dots may be marked with a pencil. The yoke has a clamping screw which may be tightened so that the yoke will not move on the recording board except by the pressure of the hand of the student. The bar may be mounted on a stand so that exercises may be conducted with the student sitting on an ammunition box, or the bar may be laid on the ground and the exercises performed in the prone position. As far as that goes, a high stand may be provided so that the exercises may be conducted with the student in the *standing* position. With a pistol clamped in the rifle rest and the bar mounted on a high stand, pistol sighting exercises may be carried on

Here the regular sight leaf of the 1903 Springfield is in use instead of the supplementary eyepiece. Silhouette or regular targets may be used at option



(Above) Eyepieces may be improvised for both the Springfield and new Garand. (Right) Mirror adjustment is controlled by wing-nuts and short, spiral springs

with far more efficiency than with the equipment described in the Service Field Manuals. Two types of eyepieces, to insure similarity of position of eye of the Instructor and Student in dual exercises, are shown: one to be attached to the bolt handle of the M1903, the M1917 or the caliber .22, M1 or M2 Rifles, and the other to be attached to the receiver of the M1 Rifle.

Note that when the rifle is clamped in the rest, the rifle, the bar, the mirror and the recording board become a single unit. If the rifle is moved, the whole works move. In other words, when an exercise is to be conducted the Instructor and the student can get behind the rifle, get the butt into the shoulder, take hold of the rifle as if they were actually going to fire, press the cheek against the stock and get the eye at the point where it will be when they actually aim at a target! *There is no unnatural position;* no holding of the eye in a strained position; no straining of the neck to get a look without moving the rifle.

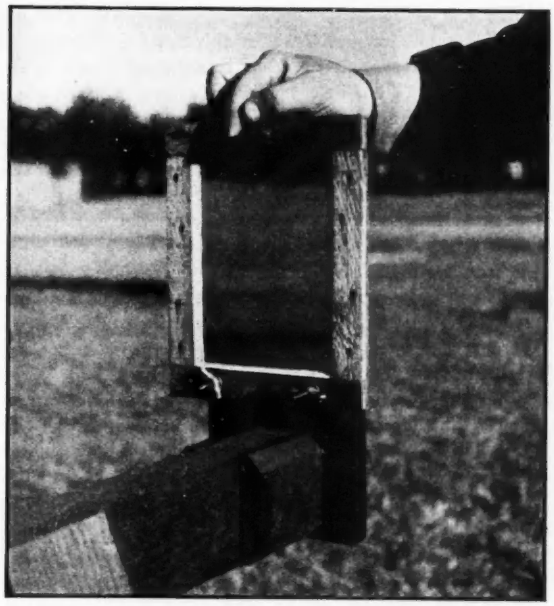
Note too that when the Winter Sighting Drill Target is used as a sighting bar there is no artificiality: when the student looks through the sights into the mirror he sees a *true picture of rifle sights in alignment,* for the sights *are* rifle sights.

When the student progresses to the point that he is to triangulate, he does not have to signal to a marker to get the aiming disc onto his front sight. All he has to do is move the yoke with his right hand until the bullseye appears in its correct position. When he is satisfied with the alignment, the *student* makes his *own* mark. If he doesn't get a group, there is no one to blame but himself. No alibis are accepted.

There is no signalling, no yelling, no confusion, when exercises are conducted on Winter Targets. Once an Instructor has demonstrated correct sight alignment on the Winter Target he needs but give the students the opportunity to get a crack at the device—they will carry on without help from then on.

Triangles are not permitted on a Winter Target. The equipment makes possible such precise alignments that there is no excuse for *triangles.* If a man aligns his sights *correctly* every time, he will superimpose one dot on another, and so the term "Dotting Exercise" is substituted for "Triangulation Exercise."

A miniature of every type and size of target may be inserted in the target mount on the front of the yoke. At one sitting, a student may be shown the appearance of the "A" Target at 200 yards or 300 yards or the "B" Target at 600 yards or the "D" Target at 500 yards or a man crouched behind a bush 400 yards away. The size



of the targets is relative to the standard targets as the distance from eye to mirror to yoke is to the range to be simulated.

Having been shown how to perform sighting exercises, a relay of students at a time may work on the targets by themselves, while the remainder who are waiting may be taught sight setting and changing in the rear. As each man finishes his series of dots, a half turn of one of the mirror wing nuts will change the position of the dots for the following man, so that a single sheet of paper may be used for several students.

Very little space is required for a Winter Sighting Drill Target, and it doesn't make much difference what the weather conditions may be during the drill period. The device will work as well indoors as out. As a matter of fact, a Winter Target in the squad room, the Armory or the Club Room with a 50 watt bulb hanging in the right position, should result in many of the lads spending some of their *night* hours practicing the *exactly correct* sighting of their weapons, trying to superimpose one dot on another fifteen or twenty times in succession.

Anyhow, the next time some fellow says "You Marines must do it with mirrors," he'll be right.

We *do* do it with mirrors at Quantico.

THIS VIBRATION BUSINESS

By J. M. GRIGG

PART I—THE BEHAVIOR OF RIFLE BARRELS

PROBABLY THERE IS NO OTHER THEORY in the field of rifle behavior that is more widely accepted with as little questioning as is the theory of barrel vibration. With most riflemen it is axiomatic that barrels vibrate, light ones more than heavy ones, and that some unamendable haphazardness in the manner of this vibration accounts for the usual failure of light barrels to prove accurate as heavy ones.

The reason for persistence of this belief is evidently the frequent observation of what is supposed to be related phenomena. Thus in everyday experience vibration is so commonly manifested to the senses that one naturally supposes the barrel to respond in the familiar manner of other objects. Add to this the observed fact of slender, flexible mediums being more easily set into motion, and one is prone to imagine he sees a scientific relation between the lighter barrel and the wider group.

In the opinion of the writer the popular theory is neither entirely true nor entirely false. The barrel bends and may reverse the direction of its bend while the bullet is in the bore; still this does not constitute the sort of vibration that is defined as "complete, rapid motion back and forth." What does occur is forced bending—a bending that is shaped in curve and degree in accordance with the time and place of the forces and reactions and the laws of mechanics. The motion compares not to the rhythmic vibration of the violin string but, except for one difference, to the motion of a reed swaying in the wind.

This difference is the fact that there is nothing fundamentally haphazard in the bending of the barrel. The manner of bending changes only when there is cause for change; that is to say only when there is a change in the nature of the combustion force or a change in the manner of interference. Could the powder be made to burn in exactly the same way, the contact between barrel and stock made to remain unchanged regardless of shock or heat, and could the rifleman support the arm in exactly the same manner each time, there would be very little difference in the group size, I think, whether the barrel were heavy or light. This is to say that haphazardness of movement belongs to cause and not to effect. Such being the case, then the fact that the heavy barrel can neither be bent nor pushed around as much as the lighter one explains why it shoots nearer to a single impact point.

Barrel movement in the tests was recorded with a stylus rigidly attached to the barrel of the rifle. The arm used was an altered and stripped Marlin 39

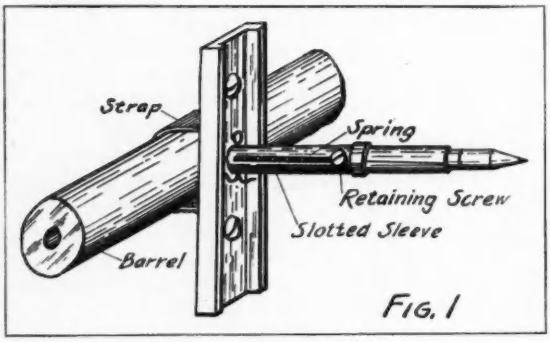


FIG. 1

What follows is an attempt to make these assertions convincing. Among other things curves are submitted in evidence, these being curves which were recorded by a barrel itself. In addition is a rather involved interpretation designed to show that no motion of the barrel is causeless, but rather is the inevitable result of a definite and theoretically predictable interplay of force and reaction.

Figures 1 and 2 suggest the method by which the accompanying curves have been obtained. As indicated the record of movement was transcribed by a stylus or register point that moved with the barrel. The stylus itself was a 6H drawing pencil, finely pointed, and carried in a spring holder designed after the fashion of small-motor brush holders. The spring held the point in contact with the register paper while the paper itself was backed with smooth sheet metal. With proper manipulation this arrangement produced in fine line tracing a supposedly faithful reproduction of the barrel movements that were described at the place of attachment.

The rifle, purposely chosen for its light barrel and accentuated throw, was a Marlin 39, the various alterations to which included removal of the magazine tube. In modified state it weighed five and one half pounds and was more accurate than a stock model, although remarkably it flipped ten ½-minutes. Thus it was deemed well suited to the business in hand.

After trial all attempt to aim was abandoned for the following reasons. One was a realization that the very strictest attention was needed for proper manipulation of the stylus. The other was discovery that the manner of curve changed considerably with change of hold. Henceforth the attention was concentrated upon an attempt to combine proper manipulation of only one stylus with proper holding in the standard prone position.

As the resultant tracings appeared too small for accurate study with the naked eye they were observed under a good glass and afterward drawn freehand to larger scale for purpose of analysis and comparison. After discounting the failures that resulted either from torn paper or unskilful manipulation, and discounting among the good ones the inevitable minor variations of structure, it was possible to discover that a definite form or pattern ran through all, notwithstanding that the original sheets looked like leaves from a stenographer's notebook.

As to form the movement consists of three quite definite stages. The first stage is that corresponding to the interval of bullet passage, during which time the forces of recoil are imparting to the rifle angular and backward and bend-

ing motions, and at the same time are compressing the clothing at hand and shoulder contacts. The second is the momentum stage when, with bullet gone and bore open to atmosphere, the acquired energy of momentum plus the pressure energy of gas on the flat face of the muzzle is expended in further compression of clothing and muscles and also in bodily rotation of the rifle about the shoulder as a pivot. The third stage is the reflex, when the freed gravitational and compressive forces result in a movement forward and downward to a place of rest somewhere near the starting place. On paper the cycle amounts practically to a closed curve.

The above description refers to prone shooting. Moreover, it must be added that slight variations of curve are manifested from shot to shot, and more particularly when day to day curves are compared. These variations are probably due to differences in manner of hold and manner of equipment set-up.

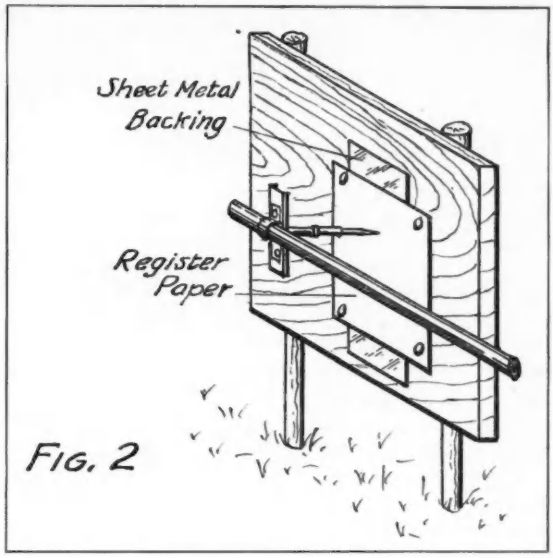
This statement that the manner of curve changes does not mean, however, that the *form* changes. The variation is a change of slope and line, and not a change in the number of moves and cusps. The form remains the same insofar as the same corresponding members are found in its skeleton work. Therefore the curves herein illustrated are representative because they relate to one particular combination of rifle, ammunition, shooter and shooting position. Had a different combination of these elements obtained, the curves should still have been the same in the matter of form, provided the basic conditions were the same.

Before a detailed analysis is begun the attention is called to one particularly significant feature of the curves, Fig. 3. This feature is the unmistakable indication of an initial downward bend in the mid region of the barrel, an indication of utmost significance in the matter of interpreting the movement.

The significance lies in the fact that this first bend inclines in the wrong direction for it to have been caused by the upward angular motion that is normally associated with backward recoil. That it inclines in the wrong direction becomes visually apparent when an opened zig-zag rule is flipped with the wrist to simulate an upward angular movement of the rifle. As the mid-region of the rule bends upward, and further, as this direction is the reverse of the direction registered by the barrel, there is no alternative but to accept the following conclusion: That this initial downbend is the result of some force that is unrelated to the backward recoil thrust.

The existence of such a force may be predicated on the assumption that the theory of displaced mass center of combustion is valid. This theory of the combustion process, as described in the November, 1939, RIFLEMAN, takes the thesis that a displaced mass center of combustion gives rise to an unbalanced force that is exerted in the direction of displacement whenever the rate of combustion change is changing. As the combustion rate changes during the ignition period, and further, as the burning and unburned powder grains tend to hug first the bottom of the case and later the bottom bore wall, the prerequisites of an unbalanced force are not wanting. Therefore if the thesis is accepted, then the proposed explanation of the initial downbend must also be accepted.

Moreover, if such an explanation is thus allowed, then one must go further and reason from the theory two additional conclusions, generally useful in accounting for the behavior of small-bore rifles: (1) that the downthrust is exerted mainly during the first several inches of bullet travel; (2) that any variation in the place or in the successive stages of combustion is necessarily accompanied by a corresponding variation in the place and magnitude of downthrust. These conclusions are useful in accounting for the change of whip or of barrel bend that accompany a change in the manner or rate of combustion.

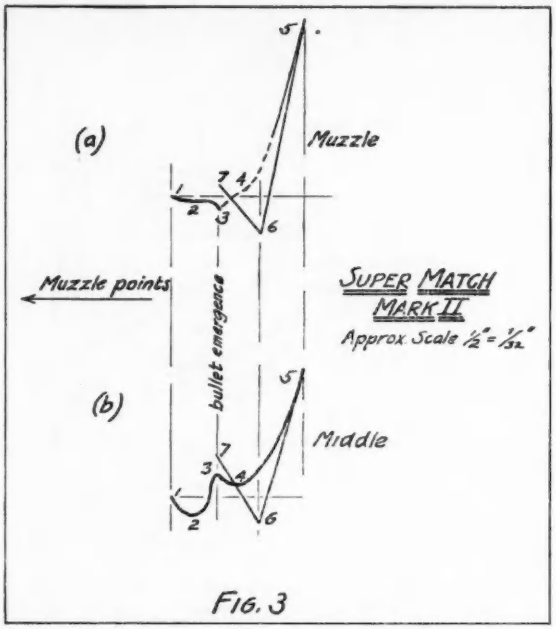


To record the barrel-movement curves, the rifle was fired prone, with the stylus in contact with a vertically supported sheet of register paper

The writer's analysis of the tracings proceeds as follows. The portions 1-2-3, both (a) and (b), Fig. 3, correspond to the interval of bullet passage through the bore. The portion 3-4-5 corresponds to the backward and angular movement which the rifle describes after the bullet has gone, during which stage, by reason of rotation about the shoulder as a pivot, there is a bodily lifting of the rifle against the attraction of gravity. The line 5-6-7 is the reflex, the stage during which the compressed muscles and clothing give up their energy and the rifle falls, due to lack of support, until equilibrium is restored somewhere in the vicinity of the starting position.

It is noted that a part of the section 3-4-5 (a) is shown dotted. It is shown thus for reason that the stylus generally parted company with the register paper immediately after bullet emergence. This momentary break is supposed to have been caused by the muzzle blast impinging as it did at close range upon the register paper backing board.

A detailed analysis to explain the first stage must proceed simultaneously with an account of the strivings of two opposing forces which try to move the rifle in opposing angular directions. One is the well-known backward thrust of recoil, which tends to rotate the rifle backward and upward, first about the center of percussion as a pivot point, and later perhaps, if the slack of clothing and muscles be taken up during this stage, about the shoulder as a pivot. The moment of its lever arm is relatively small, as its radius is the distance from the bore axis to a parallel



Curves recorded at the muzzle and at a middle point along the barrel show characteristics of barrel stress which affect the point of impact

line through the center of gravity, or through the shoulder contact when the slack is taken up.

The other force is the proposed downthrust of displaced combustion, acting first on the bottom of the case and later on the bottom bore wall. The direction of this force is downward, at right angles to the bore axis. At start of bullet travel the position of its resultant is behind the center of gravity; a little later it is even with, and still later it is ahead of the center of gravity, these relations depending of course upon where the particular rifle balances. But whatever its momentary position its force is always exerted at right angles to the bore axis; therefore, unlike the thrust of recoil, it has a maximum advantage in its tendency to put a down bend in the barrel.

Bend the barrel it does, in the mid region along the curve 1-2 (b). This bending of course is being resisted by the elasticity of the steel, while the thrust force itself is diminishing as the rate of combustion change falls off, and all the while the recoil thrust is trying to put a bend in the opposite direction. Finally, when the failing downthrust can no longer overcome the combination of barrel elasticity and upward torque of recoil, as at 2 (b), the elastic strain plus the constantly exerted recoil torque bring about a reversal, and the barrel section is carried into an upward bend. In the up direction this bend proceeds until at 3, the sudden event of bullet emergence leads to another reversal. This one occurs for the reason that the opening of the bore to atmosphere, by suddenly killing the strain of backward recoil, allows the elasticity of the bended barrel to come into play. Along the line 3-4 the reversed movement continues, first due to elasticity, then to momentum, into an opposite bend which is arrested by elasticity at 4.

Meanwhile a backward momentum has been acquired in the process of recoil. Due to this momentum and perhaps in slight degree also to the pressure of released gas upon the muzzle face and to the reaction of the gas column on the atmosphere the acquired recoil movement continues to 5. But the direction in which it continues, 3-4-5 (a) and 3-4-5 (b), is decidedly upward, both at muzzle and middle, excepting the little spring bend in the middle. The upwardness of this movement is due to the fact of rotation about the shoulder as a pivot. The slowness of movement is due to the fact that mainly the motivating force is momentum. The displacement, being slow of speed, is the portion of the recoil that is observable to the eye as an angular upthrust of the muzzle.

The reflex follows when the momentum is spent at 5. This as previously explained is due to elasticity of compressed muscles and clothing and to gravitational effects. It consists both of forward motion as the energy of compression is expended and also of downward motion as the unsupported rifle falls of its own weight. Naturally movement ceases when equilibrium has been restored, but sometimes not without a final reversal due to elasticity of the hand and forearm.

The muzzle end meanwhile has behaved in a quite different fashion. In general during the first stage its movement trends downward, although superposed upon it is a slight wave motion. The down trend is explained as being the result of backward recoil thrust, as may be visibly illustrated by whipping an opened zig-zag rule. The superposed wave represents motion that is transmitted from the mid region bend; it occurs in counterpart except for fact that it necessarily is opposed in direction or phase to the motion of the middle. That it has to be opposed becomes apparent when the motion is later identified in relation to nodes. The sharp inflection point 3 (a) corresponds as does 3 (b) to the event of bullet emergence, and the balance of the figure does not require further explanation.

The breech movement, not illustrated here, is more simple. That which corresponds to the interval of bullet passage is represented by a fairly straight backward line, generally of downward slope, but occasionally running back horizontally, or even slightly upward. The pitch of the line apparently is determined by the degree of pressure of the buttstock to the shoulder. After bullet emergence the motion follows the general pattern of muzzle and middle motion.

The foregoing analysis, though close, still leaves many details that must be treated to make the theory comprehensive and convincing. These include such matters as classification and description of motion, variation of it with variation of combustion and of interference, and as well certain questions of authority.

In the matter of authority one detail about which some curiosity may exist is that of fixing the place of bullet emergence. One reason for fixing it as has been done is the fact that at 3 there is in the sharp inflection point indication of a sudden release of strain such as might be supposed to result when the bore is opened to atmosphere.

Another argument is based on computation by the momentum theory. By calculation the rifle moves back during the interval of bullet passage a distance of .0262 inch, a figure that by usual standards may be regarded as somewhat low. By scale measure the inflection point is located approximately .0315 inch back of the origin. Therefore if the point 3 is not the place of bullet emergence it lies remarkably close to it.

(To be concluded)

A FEW RELOADING KINKS

A DOPE BAG REVIEW

FOR YEARS WE HAVE USED a bottle-capper instead of the recommended rubber mallet for seating bullets with our die-and-plunger tools, notably the B. & M. Model-26 bullet seater. A ratchet bottle-capper supplies the seating force and blocks of wood of various heights take care of the adjustable base requirement.

Thomas C. Harris told us how he adapted a capper which cost less than two bucks, shown herewith. The dies are machine nuts, carefully reamed to size with a taper fluted reamer, and simply mounted on wooden blocks which slide to a stop under the capper plunger. One die is for sizing bullets, the other for cases. This ratchet bottle-capper is geared 10 to 1 and can exert a pressing force of 600 pounds. Various adapters provide for bullet seating, repriming, etc.

Harris lubricates his capper-sized lead-alloy bullets by dipping them base first in melted beef tallow and then dropping them on a folded newspaper. His handling tool is a home-made 3-point tweezers, also shown. A spring-type wooden clothes pin with three wire pins in the clamping end does the trick. He says he can run 20 bullets per minute. The whole outfit is as cheap as can be made and still be managed to load good .45 A.C.P. ammunition at sixty cents per hundred rounds.

William C. Lane says cappers can be bought from fifty cents up, from dime stores or hardware dealers. He merely clamps his capper to the work bench and uses block bases as we do in connection with the B. & M. bullet seater. Lane says what he likes particularly is the uniformity of pressure obtained with the bottle-capper.

A. C. Davis comes through with a suggestion for a cheap bullet caster. Perhaps any of the toy-soldier outfits operated with electrical heat will serve as well, but Davis refers particularly to the Gilbert "Kaster Kit" in the standard lead-soldier model which costs about three dollars. A snout is made from the tip of an old gas-cock, brazed on. This outfit will make lead soldiers and, with the addition of a mold, lead-alloy bullets as well.

Captain L. E. Wadman suggests extending bullet-ladle nozzles 1½ inches to improve pouring of metal and filling mold cavities uniformly for better bullets. He uses ⅛-inch tubing and forks them for double-cavity molds. His gas furnace for melting metal has a 5-inch pipe with a bottom flange, and this is drilled to let in plenty of air while the pot rests on the pipe.

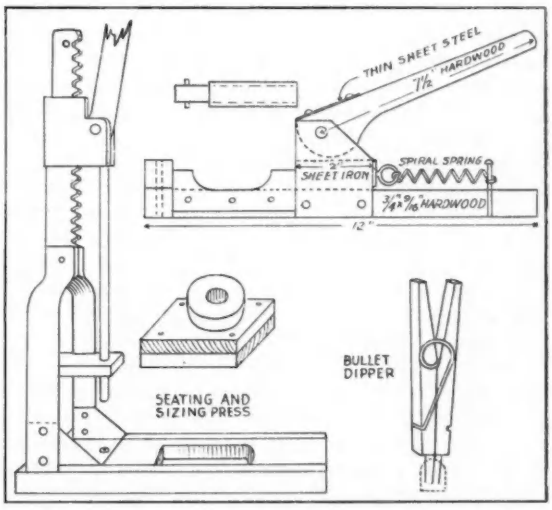
H. S. Newcomb uses a Gloria kerosene burner rigged up for a big melting pot fitted with a valve and nozzle for mold filling. For a cover he floats a disk of 16-gauge black-iron on the molten bullet metal to cut down surface oxidization, as he leaves only a small hole for adding new metal or alloy in small chunks. With this outfit he can melt copper-bearing babbit metal which contains no antimony. This copper-hardened medium-priced babbit is the "Three Star" of the Car-Mor Metal Company. He adds from 8 to 10 parts lead.

Elmer E. Waite puts wooden handles on those combination Ideal reloading tools when he molds bullets with them. This is an insulating stunt, of course, but an important one for those all-metal handles. A 3-inch lap, grooved and curved to conform and a hole and a single stove bolt through each handle does the job. The rounded extension for grasping is also 3 inches long, thus it requires a half-foot length of hardwood and a 1½-inch width to take care of the curved offset. He also improves those regular molds which have meager wooden handles by slipping over them an auxiliary hollow wooden handle 5 inches long by 1⅛ inches thick. A ⅝-inch straight hole and similar shaping of the last inch of the regular mold handle is all that is required for greater comfort in casting. Waite found butternut to be the best wood for this purpose.

William Forbes does not care to operate the separate plunger for making hollow-base or hollow-point bullets as required by the usual "Express" mold. Accordingly, he fastened his plunger to the bottom of his mold blocks by means of a metal plate. Where held to the mold blocks he used slots to permit spreading of the two blocks, the bullet, of course, remaining on the plunger point. To free the bullet he jars it loose by hitting sharply the extension of the plunger outside or below the plate. Waite says it is far more convenient to hollow-point cast bullets this way, and it speeds up production considerably. Incidentally, he makes his .30-caliber glance-proof lead-alloy bullets this way.

Howard Durfy, Jr., suggests storing bullets, after sizing and lubrication has been done, in the 5-inch cans used as containers for movie-house "trailers" or prevues and obtained at small cost from any film-distributor. His cans held 289 .30-caliber bullets of Ideal design No. 311413. They permit neat and protective storage for lead-alloy bullets made up in quantity.

Thomas' bottle-capper reloading outfit. The tools shown here include dies, plugs, block and die holder and control and a handy dipper for lubricating bullets



Any Alibis?

WHY NOT THE .32?

I HAVE BEEN ASKED many times why the .32 caliber revolver isn't used more by competitors in the center-fire matches. In trying to answer this question I absolutely refuse, of course, to be responsible for the controversial flurry this may bring down on me. I do know that I have tried thoroughly every handgun introduced to the handgunners in the past ten years, and the weight and balance of the .32 Colt Heavy-Barrel Officers' Model is my favorite.

For several years I have been shooting the .32, and while I have enjoyed a reasonable success with this gun I am not going to hold it faultless. It is a rather hard gun for which to reload successfully, but with two grains of Bulls Eye and the Hensley Clean Cutting Bullet, I have had fair success. Small caliber bullets are inclined to be temperamental, therefore, every precaution should be taken in reloading. Be sure that every bullet is of the same general appearance and without flaw.

"Smitty" Brown

A familiar figure at Perry and the big Florida and Georgia pistol meets of the last few years, "Smitty" Brown has behind him a wealth of competitive experience equalled by few other pistoleers

It is hardly possible to give much consideration to bullets without mentioning barrels at the same time, for it is proper relation between the two that makes for accuracy. I have a rifle barrel turned down by Jake Engbrecht of the Los Angeles Police. This barrel has a very fast twist and contributes noticeably to accuracy with the .32 commercial wadcutters, but in reloading I have to use precaution with the lead in casting, for if the bullet is too hard it will strip and tumble around like a peanut. On the contrary, my .32 with the regular six-inch factory barrel and a slower twist seems to perform much better with a harder cast bullet. The 98 grain, hollow base, clean cutting commercial bullet is a capable performer in either barrel.

Shooters have many temperaments, and it is my conviction that those who are inclined to be high strung and nervous find themselves in constant fear of flinching. It is my belief that this type of shooter derives a greater benefit from the .32. I personally know several shooters in Florida who have plenty of responsibilities in every day life which make it rather difficult for them to remain on the calmer side. One such shooter fired the .38 for several years and his highest average with this gun in Florida West Coast Pistol League Competition was a 765, a course average of 255. He switched over to the .32 and in his first competition aggregated 835, a course average of 278⅓. This was an unusual improvement in thirty days, this improvement being credited to the reduced recoil which permitted more relaxation, particularly in timed and rapid fire shooting.

We must remember that timed and rapid fire constitutes two thirds of every aggregate. And one of the best suggestions for mastering these stages is that stated in a few words by Emmett Jones, this page September RIFLEMAN. "Be practical and automatic, allowing the subconscious mind to carry as many of the functions as possible." No truer words were ever spoken and if and when the shooter can overcome the subconscious fear of recoil and muzzle blast he will become mechanical with his timed and rapid fire. It seems to me, then, that the short cut to this phase of "mechanical" or "subconscious" effort is the use of the .32 with its reduced recoil.

Some may say that recoil is no major factor in slow fire and therefore the .38 would have a slight advantage as the bullet circumference is some larger. However, I am reminded of one 21st day of October, 1940, when Harry Reeves, of the Detroit Police Department, was firing on a neighboring target in Savannah, Georgia, in the .22 slow-fire match. Harry shot a 98 in his first string, then followed up with a possible, 198 at 50 yards. Now the .22 bullet is .135 smaller than the .38, and it is my humble opinion that the accuracy of the .22 and .38 ammunition compares favorably; therefore recoil cannot be completely exonerated even in slow fire.

Many shooters no doubt have noticed that Reeves, Hemming, Huddleston, Walsh, Echols, etc., use the .38. These gentlemen, at least in part, have tried the .32 to no advantage, but we must remember that these Pistoleers were all seasoned shooters with many years experience and the needed confidence before the .32 made its appearance. Florida has twenty or more shooters now using the .32 to an increased advantage. Their improvement seems to be outstanding in the field. I have asked most of them the point blank question, "Why do you use the .32 in preference to the .38" and the answer is almost unanimous "Because I can stay on the bull with the .32 and the .38 has too much recoil." A number of the topflight competitors are using the .32 and if you will note the Camp Perry scores this year you will find one of them, Jake Engbrecht, in the first five places in the center-fire aggregate under very poor weather conditions. Oh yes, the wind has plenty of effect on the .32 bullet, but, what bullet is immune to wind? This is your question, you answer it.

I might add this illustration on recoil; the .45 caliber automatic has become quite popular in the past few years. The .45 scores today would have been good .22 scores two years ago. What then has happened to the .45? Machine rest tests have shown the Government Issue as loaded at Frankford Arsenal and the Commercial Loads to be highly accurate, yet the topnotchers, almost without exception, are using a lighter lead bullet and a reduced powder charge for their record scores. Take a look at the noticeable decline in the scores compiled in the National Individual Pistol Match where every shooter is compelled to use issue ammunition, yet I am sure that Frankford Arsenal or the commercial manufacturers stand ready to prove the accuracy of issue ammunition. Maybe the answer is recoil; who knows?

These are one man's arguments, but they may serve to create interest in at least *trying* the .32 as a match gun. Why not?

Ed Brown

The Old Coach

ADVANCED GALLERY SHOOTING

IT IS JUST AS DIFFICULT to make a possible at 50 feet as at 100 yards. The 10-rings of the two targets, plus half the diameter of the bullet holes, are in exact proportion. Therefore don't get the idea that indoor shooting is an easy game because the distance is so short or a game not worthy of your serious thought. Gallery shooting is more than mere holding, aiming and squeezing. It is a tough game, an interesting sport, and to succeed at it you must give it serious study. The only difference between indoor and outdoor shooting is that in the gallery wind is not a problem.

All those niceties of shooting which we study and apply on the outdoor range are just as necessary in the gallery if we would get to the top with a high average of performance. In the prone position, where greater tension of holding may vary the center of impact, uniformity of position and tension is extremely important. Between shots the left elbow must not be raised from the mat, nor the left hand grasp changed, nor the sling allowed to slip down or any change in tension of pull allowed. If any of these things occur you are very liable to go out for a nine at least.

To be successful in your efforts towards steady holding see that while you are firing your warming and sighting shots your position, and the angle at which you lie are such that the sights naturally point at the center of the bull when you relax. You can never hold your steadiest when you have to "muscle" the rifle up, down, right, or left to get the sights to ring the bull.

Something to spot with is absolutely essential to high scores. You must know where every shot strikes. Field glasses will do in a pinch at 50 or 75 feet, but a regular spotting scope and stand are best. Shooting prone the scope must be set up so you do not have to roll materially out of position to observe through it—particularly so you do not have to shift that left elbow to see through it.

Gallery light almost invariably requires that you use a larger aperture, front and rear, than outdoors. Usually the largest ones that come with your sights will be about right. Experience will tell you which are best for your eyes and your gallery lighting. You must be careful how you center up. On the 50 foot 10-ring, measuring only 15/100 inch, there is no leeway for any error of aim. Of course you don't have to actually hit mathematically in that 15/100 10-ring with the center of your bullet hole. If the shot centers 1/10 inch outside the 10-ring the bullet hole will still touch the ring and be scored a ten. But even so a group of ten consecutive shots measuring only .35-inch center to center of bullet holes is almost up to the best capabilities of a good rifle and the best ammunition.

As a result of continued practice you come to recognize a certain adjustment for elevation and windage as normal. But you may have to vary this normal adjustment a little from time to time to average and keep your center of impact in the center of the 10-ring. The reason why you will not always shoot dead center with your normal adjustment is, I think, because there is a certain small variation in the tension of your holding from score to score. Many shooters find that they have to make a small change in sight adjustment when shooting at the top and bottom bulls on their target. Make your changes in sight adjustment during firing of sighting shots, or as early in your score as possible. Lots of scores of 95 to 99 might have been possibles if the shooter had put on or taken off a click or two during the first shot or two of his string.

If the conditions allow, take at least five warmers and sighters before you start on your first score of the evening. Don't do as I once saw in a Western tournament—shooters keeping rifles and ammunition outdoors in their cars until just before their relay was called up—and the temperature outdoors ten below! A .22 rifle does not shoot its best until it is warmed and fouled.

In the sitting, kneeling, and standing positions uniformity of tension in holding is not so important as in prone because in these positions you can hardly put enough "muscle" into your hold to make any difference in the jump of your rifle. Your sight adjustment in these three positions will therefore tend to remain more nearly the same from night to night. But in these three positions many shooters find that they have to take about a minute more elevation than prone because of the tendency of the muzzle to drop slightly while squeezing on the last increment of pull. Note your groups carefully and find out as soon as possible if you need a change of this kind when you get off your belly.

Get the best shot in your club to coach you in steady sitting, kneeling, and standing positions, and then to watch you shoot from night to night, from time to time giving you suggestions towards improving your form. Here also be sure to get a stance which will result in the sights aligning naturally on the bull, so you don't have to pull the rifle over by force. I think it is best for the beginner to start his standing shooting in the N. R. A. position because he becomes good at it quicker and his higher scores encourage him. But don't neglect the Army standing position because there are many matches where it only is permitted.

If possible put in a ten or fifteen minute period of dry shooting at home each day. Daily dry shooting does wonders if you do it conscientiously, trying to pull each shot as though you were shooting in a match. Confidence in these positions is necessary to overcome a tendency to buck fever, and confidence comes only from thorough familiarity, the result of practice and experience, plus what you can learn from others.

What is a good score in the gallery? Taking three position shooting, I would say that an average of 95 to 98 prone, 85 kneeling, and 75 to 80 standing, with a total of about 260 for the match would be excellent for any one in the first half of his first season in the gallery. With good coaching, and personal interest and self analysis a beginner ought to reach such an average in his third or fourth month of weekly or semi-weekly shooting, plus a little dry shooting at home. A really fine shot should average about 98 to 100 prone, 95 or better kneeling, and 85 to 90 standing, with a match average of 275 or better.

POWDER SMOKE: READERS COMMENTS THE NEWS DESK

RE-LOADS . . .

OUR GUNSMITHS

Webster defines "work" thusly: "To exert one's self for a purpose; to put forth effort for the attainment of an object; to labor; to be engaged in the performance of a task, a duty or the like."

The same authority defines "piddle": "To deal in trifles; to concern one's self with trivial matters rather than with those that are important."

As one who has long suffered the lash of disappointment, may I add my own more homely definition? "Work is doing what you do *not* want to do."

Let us consider the customer's side of gunsmithing. It is all right for an amateur to play around, jumping from one thing to another as fancy dictates, but one who holds himself out to the public as a gunsmith has a duty to perform and should *work* with reasonable steadiness and fair impartiality. How long would a barber shop last were it to take customers out of turn; yet these same gunsmiths are instanter doing a job for customers who call in person, disregarding promises made to those who are out of sight or less importunate. Must we regard our gunsmiths as men subject to the same limitations and moral obligations as those of us who work for our daily bread, or as artists with poetic license which gives them the right to disregard the ordinary rules of order and labor? Most of our prominent gunsmiths are men of great skill, kindness and honesty but they are kidding themselves in many cases in thinking they are working when instead they are just following their own whims. No business can long live unless it follows the rule of turning out work.

Some men out of soft-headed kindness cannot say "No" to anyone personally at hand, but these same men can without any apparent qualm of conscience neglect a solemn promise or plea if contained in a letter.

Why in the name of common sense cannot our self-employed gunsmiths apply a few simple, cardinal rules: take no more work than they are able to do; make no promises they know cannot be kept and will not be performed; get out work in turn in which it comes in and have their customers feel they *surely* will get the job. Have we not all had the uneasy feeling that comes when leaving a job with some gunsmith that possibly he may never get at it at all? Go into some of the small shops and look around at the jobs that have been there five, ten or even twenty years and remember the mess that often happens when some gunsmith has died and there are dozens of guns that have been taken apart in unmarked boxes that no one but he knew the owners of. I once recovered a gun in parts that by good fortune I was able to identify. It had only been there five years and I was more fortunate than many others.

I am fully aware of the trouble that gunsmiths have in receiving requests for estimates where the customer has no intention of ever doing the work, also the burden of much unnecessary correspondence; but it is the duty of a man engaged in a vocation to protect himself from such annoyances. If a customer desires to come in and take hours of time, let him understand this must be paid for at working rates and triflers would soon disappear and no valuable customer would be lost by such a practice. This may seem to be millennial but if this is not done the lone gunsmith will go the way of many small independent business men and farmers who are too shiftless to keep their houses in order. These men must become hewers of wood and drawers of water for those who are more capable.

Can we not be spared our gunsmiths? We hope so, but to survive they must save themselves. There is more to gunsmithing than the ability to work on guns, for:

"They little know of gunsmithing
Who only guns do know."

LEWIS HAZEN, Des Moines, Iowa.

Our gunsmiths, we believe, are coming along with better business relationships as reputations become established. We'd like to have the answer to Mr. Hazen's complaint as it does have a familiar ring; so, Mr. Gunsmith, defend yourself and it'll be printed pronto in these columns.—ED.

TRIGGER PULL

After reading "Kap" Richard's talk on trigger pull in the July issue of THE AMERICAN RIFLEMAN you just know "Kap" is an honest duck—honest anyway.

Fella I know's been shootin' an army rifle—30-'06 in tip top condition. It probably set around the arsenal most its life and is past voting age. This fella thought he thought a lot of it until one day he got the high falutin' idea—but we're gettin' the

(Continued on page 39)

N. R. A. BOARD TO MEET

The annual meeting of the Board of Directors of the National Rifle Association will be held February 6 at the Mayflower Hotel in Washington. The business meeting will be held at 2 o'clock Friday afternoon for the election of officers and for the transaction of other business.

The annual Friday evening dinner will, as in the past, be attended by official Washington, which will join the directors in considering national defense problems.

The invitation is again extended to all members and friends of the N.R.A. to attend, particularly Life members and club officers. Reservations should be addressed to the Secretary, National Rifle Association, 1600 Rhode Island Avenue, N. W., Washington, D. C., as early as possible.

TIMED FIRE
With Bill Shadel

That cold shower wake-up we all had Sunday, December 7, when the yellow dastards (our Washington commentator uses it) slugged Pearl Harbor, has set everyone wondering about competition. With no one willing to make predictions this early, we can at least settle down to some serious defense training—each NRA club starting a program that will reach every potential selectee in the community, for some morale building personal marksmanship. Some 35 percent of these selectees will be carrying a rifle, another 15 to 20 percent the new light carbine, and they'll appreciate the advance training you can offer them.

While Hunting: *That fellow prowling through Maryland woods with the white sweat shirt underneath a khaki hunting coat open down the front, was the nearest thing in size and shape to a white-tail you could ever devise for the woods. Wonder when the hunters are going to get wise to a few fundamental safety rules?*

Jack Williams, our genial host at Nicatous Lodge in Maine, runs a camp we'd like to frequent. Set in ideal hunting or fishing country on the shore of twelve-mile Nicatous Lake, accommodations the finest and meals the absolute tops, it's a place we're going back to another year to complete that photo story on Maine hunting; when we're not rushed to get game within three days.

Back in Garrett County, Maryland, all the shooting and camp talk about game that got away must mean the wardens will find plenty of cripples after season closes. A pitiful example of poor equipment and of no preparation for the season, judging from the under-gunned and borrowed-gun hunters. Carrying no cannon ourselves (.300 Savage, 99, favorite by the way for this eastern hunting) we were in the minority, as regards caliber and power, with so many .25-20's, shotguns with punkin's balls and other assorted weapons.

Did'ja know? The 1941 trend was decidedly upward . . . the number of registered tournaments, for instance, 294 in 1940 to 375 last year . . . a total of 11,000 various qualification insignia passed out during the year compared with 6,500 the year before . . . three more regional tourneys were added to the program . . . Gallery League team entries jumped from 189 in 1940 to 528 last year . . . the number of Gallery Leagues, themselves, went from 25 to 65 with an increase in shooting members from 1,700 to 5,500 . . . THE RIFLEMAN is now being printed to the tune of 64,000 . . . the number of persons taking out life memberships in the N. R. A. increased some 300 percent . . . the Junior Rifle Club Matches have 290 teams firing this year, representing an increase of 100 . . . junior qualifications, totaling 87,345 at the end of November, are certain to beat last year's record of 90,027 . . . junior camps affiliated total 520, a sizable jump from 1940, and there are at least a thousand junior clubs now active.

NEW BOOKS:

"AUTOMATIC ARMS"

By MELVIN M. JOHNSON, JR. and CHARLES T. HAVEN

The land phases of World War II have been, and may well continue to be preponderately the light machine gun's show. The clumsy tripod-mounted heavies, fair-haired boys of 1914-1918's scrap on the Continent already have been put into their logical places in the mechanics of warfare, 1942 style, and the light, accurate bipod-mounted automatic is coming to the fore as the logical partner of the infantryman's rifle. With all of the offensive value and there-when-you-want-it mobility of the one-man weapon, these relatively new fast-firers have gone a long way toward becoming the most important single weapon of World War II, and may go a longer way toward winning it.

Co-authors Johnson and Haven have steered a prudent course between the twin perils of pompousness and the "popular style" in turning out their book on yesterday's and today's automatic weapons. Presenting their case with all the logic of an architect's blueprint, the book discusses in order the history and development of the modern self-loader, how it works, how it may be kept working, and sums up with crystal-clear discussions of its employment in combat and of the factors entering into the design and production of a modern automatic weapon.

No treatise on the light machine gun alone, or even of machine guns as a whole, *"Automatic Arms,"* as its title implies covers the entire scope of self-loading weapons, from the comparatively unimportant pocket autos to the big brothers of our rifle caliber machine guns, the 20 to 50-mm. automatic aircraft and AA cannon. As a textbook for the entire subject of gas- and recoil-operated mechanisms, *"Automatic Arms"* fills admirably the place formerly held uncontested on our bookshelves by Curti's *"Automatische Waffen,"* published in Germany three years ago.—JOHN SCOFIELD.

New York, 1941, William Morrow and Co., $4.50. 344 ps., about 200 illus.

"ARMIES ON WHEELS"

By S. L. A. MARSHALL

This is unquestionably a most brilliant, comprehensive, logical, supportable essay on the warfare of 1940-1945. Delivered in simple, powerful, quotable style, it is well worth reading for its literary merit, its sound logic and the startling application of basic philosophic, historical truths.

Primarily the author shows that armored forces require a high proportion of motorized, integrated, versatile-weaponed infantry and a highly coordinated, cooperating air force. He absolutely debunks the "one-weapon-or-arm-is-the-whole-works-so-let's-just-build-a-flock-of-planes-and-tanks" doctrine of the Sunday supplement or pseudo-expert persuasion.

Following Mr. Marshall's frequent analogies to sports, he shows that winning armies owe their success to complete integration of effort, versatility of power, coordination and cooperation.

To paraphrase Mahan and summarize Marshall, "bases mean tanks". Motorized, fast-moving, artillery-armed infantry units provide bases for the armored forces and coordinated air units. The more of the latter, the more vital a fast-moving, ground-holding, base-maintaining infantry.

The motorized infantryman, says Marshall, can surprise but cannot close, due to the extensive use of armer and heavier guns in area defense resulting from the extensive employment of armored forces. "The infantry remains the principal arm, but not the arm of decision. It must be made complete by tanks and aviation."—MELVIN M. JOHNSON, JR.

242 pages. Published by William Morrow and Company, New York.

"A FORGOTTEN HERITAGE"

By HARRY P. DAVIS

As the first book to appear on the indigenous Kentucky rifle since Dillin's study in 1924, Harry Davis's volume is certain to attract the attention of gun collectors and arms-conscious historians. It is not, however, a gun collector's manual in the sense that Dillin's work was. Rather is it a memorial to a great rifle and the great Americans who used it; a story that needed telling without the hampering necessity of making it purely a student's affair. It tells ably the saga of a man and a gun, typified by the American frontiersman and the long flintlock rifle with which he carved a United States from the wilderness. *"A Forgotten Heritage"* is a good book—no textbook or reference work but a book to be read and enjoyed.

Huntington, W. Va., 1941, Standard Printing & Publishing Co. 199 ps., 29 pls.

(RE-LOADS *Continued from page 38*)

cart ahead of the horse—as I was saying he and the old gun were pretty thick and hunted coyotes a lot. When he'd spot one he'd wrap his fingers around the grip like he was shakin' hands with a friend he hadn't seen for twenty years, put his finger through the guard and take up the slack and start squeezin' and about the time the sights were lined up the old cannon would go off, and you know sometimes it would scare mister coyote plumb to death. He might be quite a way off too. But this fella—here comes the horse and cart right end to—this fella got the idea the old gun was obsolete—one of these new calibres would put him in the up-to-date class—that .220 Swift must be chain lightin'—a fella could load it light like when the prairie poodles were young and foolish, he could step it up a little as they grew wiser, and a full load ought to take a coyote point blank at any reasonable range. Hot dog, it ought to be as handy as wearin' the every day shirt to Sunday school. He would not be packin' the old gun much if he had one of them.

It came, scope and all—wrapped in oiled paper with the bore full of grease. What a beauty, it was somethin' for sure. Shooting friends had guns the same model with trigger pulls adjusted short and sweet. This'n was only half that on the old gun but it did not equal his friends and it must compare with theirs. When it could not be lightened farther he cut a small end from the trigger spring, then it was pare and try, pare and try and when he finished a complete ring had been taken from the spring and the pull was very light. No more pullin' and yankin' like he used to do with the old gun—no sir, he was through with that. He spent much time snappin' and admiring that pull (Dad told him when he first put a gun in his hand that no one but a fool snapped a gun on an empty chamber).

The first coyote to bat stepped right up and looked things over at 200 yards, gosh he was right here in the scope. His hand assumed that death grip on the stock and his finger slipped to the trigger. WHAM!!!, why—he'd only taken up slack—what a fogy to forget—these modern triggers did not have slack. Meanwhile coyote number one was laughing up his sleeve. How harmless most of these thunder sticks were.

The next shot was not so handy. He caught a glimpse of the wily creature going into a draw and it took a sprint of a quarter of a mile to raise him again—and there he trotted along with apparent ease of mind. About so so would be right to hold the old gun with the top of the sight just over his shoulder. WHAM. Dust flew just there. What a shootin' fool this thing was. He'd take him next shot easy. The bolt slammed home, WHAM!!!, damit—why his finger was not near the trigger. (He swears it was not anyway.) Well if the gun was so good it'd do it's shootin' without pullin' the trigger he guessed he'd better take 'er home and work 'er over again. Coyote number two was gone—but happy. Was there depression. Two clean misses. If he'd had the old gun—homely sights and all——.

But self humiliation does not always ride single. Before home another coyote appeared on the scene, loping across the landscape with an occasional glance toward the two legged animal plodding the hills. This was too much for fella, this time things would go right, he'd be careful on that trigger. How easy it was to follow him in the scope, he wrapped his hand around the grip—mustn't, mustn't—he relaxed and groped for the trigger. WHAM. The missive passed square behind the target—right there, right now—. Fella turned his back and coyote number three stopped for a fleeting look from a far knoll.

At home the shiny ultra modern piece went in the cabinet, and fella sat on a chair with the old gun across his lap. What a wonderful gun it was. He tried the pull. Nothing flimsy or half way about that. It did not go until you were ready and when you were ready she went, which only goes to show that carrots are sweeter'n peaches, provided you grew up on carrots—CLEON B. SKILLMAN, Eddyville, Nebraska.

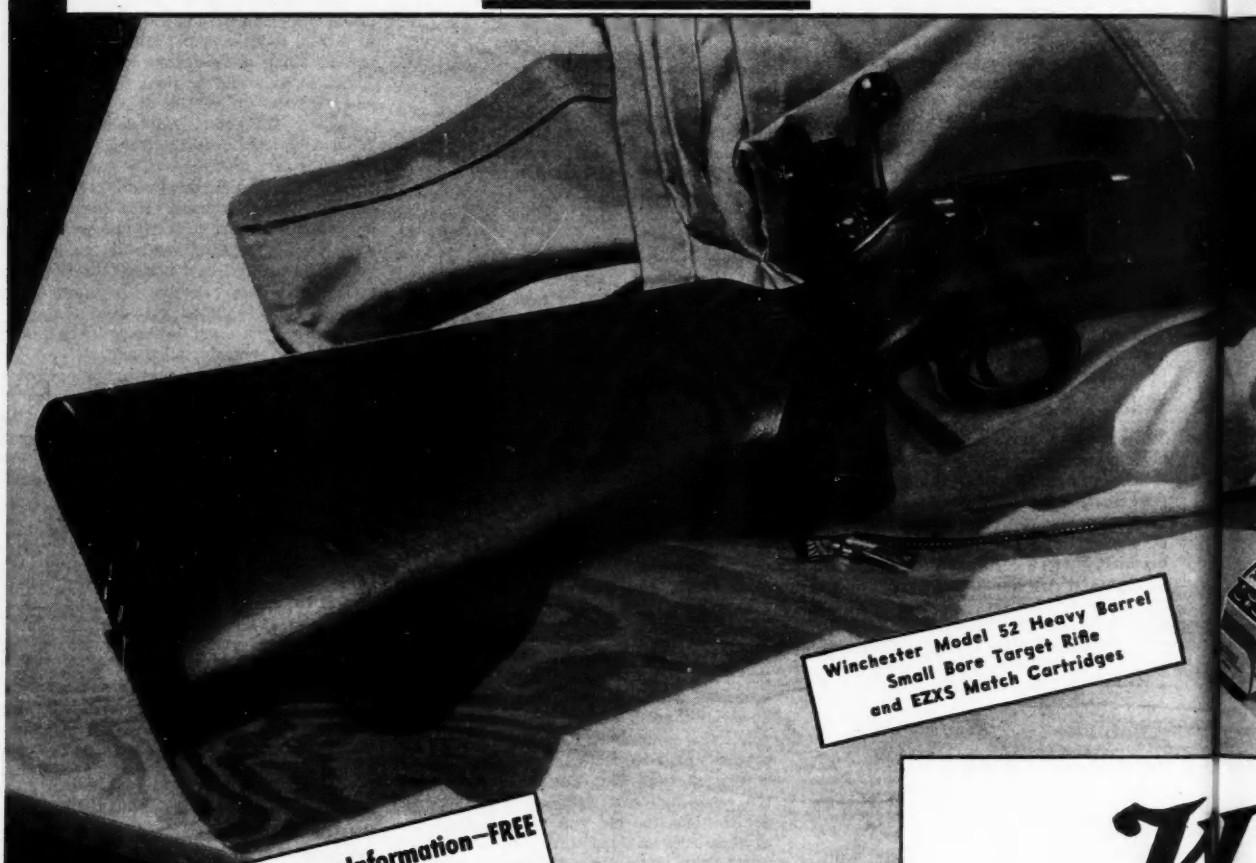
SOME POWDER!

Your attention is respectfully called to an error in the article on page 21 of the December RIFLEMAN. At the bottom of the first column it is stated the powder charge is *2.30 grains* and *2.35 grains* for the Norwegian Krag. Some powder! No doubt this should read *grams* or 35.489 grains and 36.2605 grains.—A. A. Wawrzyniak, Berlin, Wisconsin.

GRAINS FOR GRAMS

The Krag-Jørgensen mentioned on page 21 of the December issue of the AMERICAN RIFLEMAN must be an unusual rifle, using 2.3 grains of powder for a 10.2 gram (154 grain) bullet. Wonder what results one could get with 35.5 grains powder with same bullet—greater range and greater accuracy. I think this is a misprint in powder charge—grains for grams.—B. H. Branch, Hamilton, Va.

LEADERSHIP OVER
HELPS YOUR SHOOT



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cessful epeating rifle was Winches- the first l center-fire repeating rifle n comb as Winchester. In countless other well-known instances Winchester has been first with outstanding improvements in shooting equipment. Always, Winchester dependability, power and accuracy — and the ability to stay on the job under the world's hardest conditions — have been piling up Winchester tradition. And always, too, from first to last, Winchester Guns and Ammunition have led in popularity and success in the hunting field and in target shooting.

Your dealer will gladly recommend the right Winchester equipment to meet your wishes. Consult him today.

CARLSON REPEATS

For the second consecutive year Dave Carlson has proven himself to be the class of the small bore rifle crop, and proved it in convincing style.

By compiling a ranking figure of .87948 he led both Bill Woodring and Charlie Hamby by a full percentage point in the National Small Bore Rankings just released by the Competitions Division. The rankings were figured on the basis of Masters defeated in Class AA, A and B small bore competition.

Like Harry Reeves, who gained top ranking on the pistol lists, the blond New Haven rifleman was favored at the start of the year to retain the crown he won last year. He fired more than 3,000 shots for his ranking.

Dave Carlson

Dave Carlson: Opening the year with a complete rout of all opposition at the National Mid-winters at St. Petersburg, Dave kept up a blistering pace throughout the season, winning at a rate of better than once out of every three individual events entered. At St. Pete Carlson copped six of ten events for his best record, followed this with one match victory apiece at Poughkeepsie, N. Y., Sea Girt and the Connecticut State Matches before sweeping the Maine State tourney.

He lost out in defense of his National Championship at Camp Perry but still managed another match triumph. In none of his ten tournaments was Dave without a match victory.

Bill Woodring: The only man beside Carlson to be the top ranking small boresman more than one year, the East Alton, Ill., flash staged something of a comeback to get this second place rating after falling to fifth a year ago. Taking in five major tournaments including the Mid-west Regional, the Chicago Indoor Dewar and Camp Perry, Bill faced 2,313 Master competitors. He fired consistently well in every trip out with the exception of the National Matches where he spoiled his chances of regaining the top.

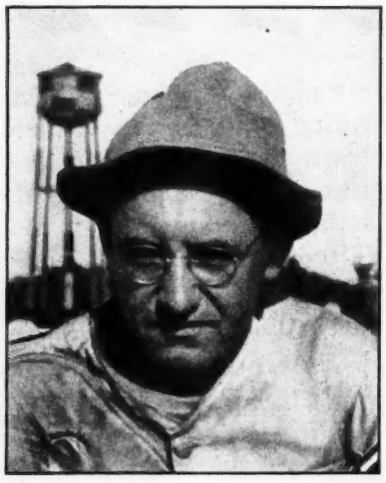
Charlie Hamby: Two major competitions, the Southeastern Regional and the National Matches, were all that the Atlanta veteran was able to piece together for ranking purposes last year. In both, however, Hamby was outstanding enough to make the jump from an unranked position in 1941 to third. In the Southeastern's eight events, Charlie won three and finished second five times. He won the opening match of the Camp Perry program, finished strong enough to warrant his high position.

Ransford Triggs: With better than a fifth place average in the National Rankings over the last four years, the slim New Jersey star is unquestionably one of the better target shooters in the country. But last year, 1941, was his best what with the National Championship he won at Camp Perry added to his list of victories. For his fourth place ranking this year Triggs competed in four major tourneys before hitting the National Matches and his first National title.

RIFLE

Rank	*Name*	*Ranking Figure*
1	Carlson, Dave, New Haven, Conn.	.87948
2	Woodring, William, East Alton, Ill.	.86814
3	Hamby, Charles G., Atlanta, Ga.	.86746
4	Triggs, Ransford D., Madison, N. J.	.85952
5	Lacy, Jack, New Haven, Conn.	.80674
6	Cole, Mrs. John W., Minneapolis, Minn.	.79840
7	Schweitzer, William, Hillside, N. J.	.76399
8	Poe, Paul E., Rock Island, Ill.	.75661
9	Wickersham, Bud, San Francisco, Calif.	.75016
10	Lear, Samuel C., Vallejo, Calif.	.73780
11	Pade, Ernest, Sellersville, Pa.	.72947
12	Kuhn, Frederick O., Stratford, Conn.	.72281
13	Sayrs, William A., Cincinnati, Ohio	.72044
14	Willman, R. O., Mount Wolf, Pa.	.71169
15	Mason, Lew W., Aurora, Ill.	.70974
16	Pope, L. A., Los Angeles, Calif.	.70526
17	Bell, Ammon E., Hummelstown, Pa.	.70516
18	Hawcock, Emory V., Monmouth, Ill.	.69748
19	Frank, Carl, Rochester, Minn.	.68730
20	Hunsicker, A. W., Akron, Ohio	.68454
21	Perkins, E. Robert, Fresno, Calif.	.68421
22	Combs, Gilbert W. T., Jr., Orange, N. J.	.68315
23	Whipple, Charles C., Somerset, Pa.	.67209
24	Wade, James, Boise, Idaho	.67059
25	Seagly, W. E., Topeka, Ind.	.66965
26	McCubbin, J. F., Brownwood, Texas	.66768
27	Allen, Loran C., Springfield, Ohio	.66404
28	Pope, R. C., Dallas, Texas	.66385
29	Spurlin, George W., Dallas, Texas	.66196
30	Hughes, E. R., Canton, Ohio	.66082
31	Warner, Selden G., West Orange, N. J.	.65924
32	Kuhn, Willet, Houston, Texas	.65674
33	Patriquin, William, Cleveland, Ohio	.65562
34	Newcomb, R. A., Tulsa, Okla.	.65493
35	Holm, Theodore J., Des Moines, Iowa	.65455
36	Jensen, Max, Cleveland, Ohio	.65442
37	Blensinger, Arthur, Rochester, N. Y.	.64980
38	Kurtz, Samuel G., Lebanon, Pa.	.64596
39	Rader, E. M., Lorain, Ohio	.63878
40	Grosskopf, Marshall R., Marion, Wis.	.63636
41	Eakins, Fred O., Jr., Columbus, Ohio	.63367
42	Tekulsky, Irwin N., New York, N. Y.	.63202
43	Yearsley, Andy, Piqua, Ohio	.62523
44	Grooms, Stanley, Grove City, Ohio	.62476
45	Henning, M. S., Coraopolis, Pa.	.62318
46	Mylant, Steve, Cleveland, Ohio	.62117
47	Robertson, Marie, Houston, Texas	.61290
48	Pipes, S. E., Monroe, La.	.60956
49	Crowley, John J., Concord, N. H.	.60853
50	Ferguson, C. Wayne, Jackson, Mich.	.60565

Charlie Hamby



Bill Woodring

Jack Lacy: Taking in ten tough tournaments from Vermont to Washington, D. C., Lacy met nearly 3,000 Master competitors during 1941. Opening at Poughkeepsie, N. Y., in May, he followed with Sea Girt with only fair results in both matches. He hit his stride at the Connecticut State, Eastern Regional and Vandergrift matches. Prized among Lacy's collection of achievements during the year must be his close second place finish to Triggs for the Critchfield Trophy.

Mrs. John W. Cole: Representing the fair sex in the exclusive first ten of the 1942 National Rankings, the pretty Minneapolis shooter rates higher than any woman before her. Three tournaments, the Chicago Indoor Dewar, the Minnesota State and the National Matches constituted her major activity for the year. She fired steadily enough to take home the Women's National Championship from Camp Perry.

Bill Schweitzer: It is quite a novelty for Bill to rank as low as seventh—the first time in four years—but for those who know of his penchant for tough competition it is no surprise. Schweitzer shot in five big tourneys starting with the National Mid-winter. He followed with Sea Girt, Connecticut State, Eastern Regional and Perry.

Paul Poe: Three tournaments were all that was required by Poe to qualify for the eighth spot. He went to the Iowa State tourney in June and captured one event out of four entered and took a third, fourth and an 11th at the Mid-western Regional. The Wisconsin State matches provided him with another win and a second, fifth, sixth and seventh in five tries.

Bud Wickersham: The West Coast's first representative in the top ten, Wickersham made the Western States matches and the Far Western Regional at Richmond plus Camp Perry. He won only a single first place award in those three tries but seldom was far out of the picture. He met 1,529 Masters in 21 events.

Samuel Lear: Forced to miss the National Matches, the Vallejo, Calif., shooter won his spurs in the Western States and Far Western Regional matches. Two victories in four at the Western and one in eight at the Regional with nothing more than a single 15th place to hold him back, earned Lear tenth place.

REEVES IS TOPS

Harry Reeves was the top pistol shooter in the land in 1941—as if you didn't know.

Coming as a surprise to practically no one Reeves occupies the Number One spot in the official National Pistol Rankings just announced by the Competitions Division. He was the favorite to nab the coveted position at the start of the year, he fired consistently at the top of the heap throughout the entire season, and he won the honor like a true champion—by meeting the best in the country in the country's toughest tournaments without picking spots for easy competition.

Harry Reeves: Tabbed as the man to beat in 1941 Reeves suffered what might have been a staggering blow to his hopes in his first trip out last year. After garnering two seconds and a first place in three events of the National Mid-Winters at Tampa Harry was relegated to a lowly 34th place in the fourth match on one of those "little shot that wasn't there" episodes during a rapid fire string. He came back in the remaining six .22 and .38 caliber events to net three seconds, two thirds and a sixth place and, moving into the Flamingo Matches at Coral Gables, to compile an enviable record.

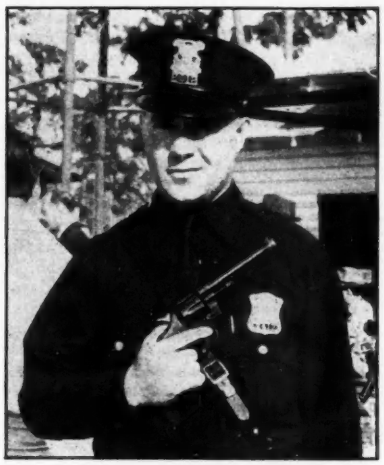
Thirteen first places in 19 events of the Michigan State and North Central Regional matches, and great one man shows at the pre-Perry and Perry followed.

Huelet Benner: Earning the second spot by a wide margin in this year's rankings, Benner climaxes his third successive year in this select list with his best showing over that stretch. Last year he ranked eighth and the year before thirteenth.

The Fort Knox, Ky., Army sergeant participated in four tournaments in the AA, A, and B classes, firing in 22 separate events. He netted seven first places, nine seconds. Too late to enter the full Perry program, Benner participated in only two matches there in the .22 and .38 caliber fields. He clinched his spot, though, with two second place scores against 157 Master competitors.

Lieutenant Garold Curo: The Camp McQuaide, California, Army officer moves up two notches from his standing a year ago even though restricted to competition within his own state. Curo participated in the California State matches, the Far Southwestern Regional, the Southwest International and the Pacific State Championships. Two bad showings marred a consistent record.

Huelet Benner



Harry Reeves

Al Hemming: Lifted from his perch so long held at the top of pistol ranking lists Hemming still managed a very creditable fourth place finish this year. Managing only one first place finish during the Florida season Hemming's best tourney record, though still second to Reeves in the aggregates, came in the North Central Regional in which he garnered three firsts, a second and a trio of third place finishes.

Thurman Barrier: Most travelled of the high ranking pistolmen during the year was Marine Sergeant Thurman Barrier of Annapolis. He took in Florida's two March attractions, Kansas City's Heart of America match, the Eastern Regional, the Virginia and New Jersey State Championships, Detroit's Pre-Perry and the National Matches, firing 1,500 shots against 1,915 Masters.

PISTOL

Rank	Name	Ranking Figure
1	Reeves, Harry, Detroit, Michigan	.89002
2	Benner, Huelet L., Fort Knox, Ky	.87500
3	Curo, G. W. Lt., Camp McQuaide, Calif.	.82003
4	Hemming, Sgt. Alfred, Detroit, Mich	.76081
5	Barrier, Sgt. Thurman, Annapolis, Md.	.74778
6	Walsh, Walter R., Arlington, Va	.74096
7	Huddleston, Garfield, Kansas City, Mo.	.73759
8	O'Connor, Francis, Kansas City, Mo	.72734
9	Rogers, Melton R., Oroville, Wash	.72636
10	LaLonde, Maurice, Detroit, Mich	.68660
11	Brown, C. A., Tampa, Florida	.68477
12	Jones, Emmett E., Los Angeles, Calif	.67539
13	Anderson, Arnvid, Warroad, Minn	.67427
14	Standau, Rollo L., Tampa, Florida	.67393
15	Engbrecht, Jake, Los Angeles, Calif	.66516
16	Yanick, Oliver, St. Louis, Mo	.64067
17	Woody, J. N., Stanton, Texas	.63827
18	Lawrence, Don, Austin, Texas	.63675
19	Meloche, A. L., Phoenix, Arizona	.63463
20	Echols, Lee E., Nogales, Ariz	.63404
21	McIntyre, Jack L., San Diego, Calif	.62446
22	Sanderson, Lewis C., Detroit, Mich	.62300
23	Young, W. H., San Jose, Calif	.60853
24	Chapman, P. M., Seattle, Wash	.60557
25	Brown, Dr. H. J., Jr., Hollywood, Calif.	.57949
26	Jacobs, Gloria, Woodland, Calif	.57910
27	Roettinger, Philip C., Quantico, Va	.57568
28	Porter, John, Detroit, Mich	.56869
29	Cline, Bert, Riverdale, Md	.56799
30	Spavor, Paul C., St. Louis, Mo	.56335
31	Bracken, R. C., Columbus, Ohio	.55069
32	Perna, Vito, U. S. M. C., Annapolis, Md.	.54882
33	Adams, Henry J., East Orange, N. J	.54760
34	Logie, Charles, Grand Rapids, Mich	.53991
35	Wilson, M. O., U. S. S. Pandora	.53030
36	Kirk, Ralph, Kansas City, Mo	.52906
37	Slack, Wilbur B., Washington, D. C	.52304
38	Starkey, Basil, Los Angeles, Calif	.51801
39	Strand, Alvin, Los Angeles, Calif	.51207
40	Van Doren, C. L., Los Angeles, Calif	.50928
41	Trones, Leonard J., Bellingham, Wash	.50811
42	Shapiro, Albert, Detroit, Mich	.50768
43	Billing, Sgt. Mark, Quantico, Va	.49243
44	Flocchini, Armando J., San Francisco	.49202
45	Tiefenbrun, Vincent, East Alton, Ill	.48808
46	Anton, Christ, St. Louis, Mo	.48437
47	Sayers, Clyde, Detroit, Mich	.48041
48	Harris, Ray, Enterprise, Oregon	.46993
49	Ahern, Jack, San Francisco, Calif	.46470
50	Mitchell, Sgt. Thomas, Pensacola, Fla	.46130

Walter Walsh: Only slightly less active than Reeves, Hemming and Barrier, G-Man Walsh dropped a notch in the prize listing from his 1941 standing on the basis of two poor results at Camp Perry in individual matches. Still the little Arlington, Va.; shooter was top dog in eastern competition.

Florida's two big tourneys and the Eastern Regional provided an early start for Walter who faced 1,687 Masters during the year.

Garfield Huddleston: After a creditable start at Tampa, Huddleston rolled up six firsts in eight events at the Heart of America tourney, two out of ten at the Missouri State event, and a swell run of win, place and show positions in the Southwest and Mid-western Regionals and the Corn State matches. At Perry a first and two seconds overcame one bad score.

Francis O'Connor: Skipping Florida, O'Connor began his bid for ranking at home in the Heart of America tourney. Though his performance was only fair it prepared him for the Missouri State matches in which he grabbed six firsts in 10 tries. The Southwest and Mid-western Regionals followed and six firsts earned him his ranking.

Mel Rogers: Occupying the same spot he held a year ago, Mel met nearly 1,700 Masters in five major tournaments. Starting with the National Mid-winters Rogers was a little slow but warmed up enough to score three wins in the Flamingo. He licked Pacific Northwest Regional competition to the tune of three firsts, a second, two thirds and two fourths and kept well among the leaders in the pre-Perry and at Perry.

Maurice LaLonde: The third contribution of the Detroit Police team to the first ten, LaLonde followed the same trail as Reeves and Hemming. He boosted himself from 24th place in 1941 mainly by a consistent showing in each of the six major tournaments he attended. This is emphasized by the fact that during the year he managed only one first place in an individual event.

Lt. G. W. Curo

TOURNAMENT REVIEWS

U. S. Aggies Gallery Rifle: Nick Kroeze, New Jersey draftee stationed at Fort Belvoir, Va., mopped up November 15 and 16 in the first open registered gallery rifle tournament ever held in Washington, D. C. Sponsored by the U. S. Aggies Rifle and Pistol Club the match drew 75 registrants. Kroeze took the Grand Aggregate by 10 points over Gilbert Moriconi of Richmond, Va., the metallic sight aggregate by four points over Hugh Riley, Arlington, Va., the three position metallic with 279, and the four position any with 194—coupled with a second place in the offhand match and a third place in the prone-sitting event. George Lindsay, Arlington, topped belly shooters with 300 plus 27 additional bulls. Ruth Morgan, Greenbelt, Md., took women's honors, Audrey Richard, Washington, paced the juniors, Government Printing Office won the three position team title, and the women's team match went to the National Capital Rifle Club foursome.

Central Illinois Rifle: Arthur Koester, of St. Louis, walked away with the biggest share of trophies at the November 23 shoot of the Central Illinois Rifle League at Springfield. He won the prone-sitting match with a score of 200 plus 10 extra bulls sitting. He won the prone-kneeling with a score of 199 and he took the Grand Aggregate with a score of 785 x 800. Jule Leiweke, East St. Louis, took the prone-standing while Martin Phelan, Winnetka, won the four position handicap with 197.492. The quartet of Koester, Tiefenbrunn, Short and Peacher, representing the Industrial Club, won the four-man team match with a 2319 score.

Tamalpais Gallery Pistol: Breaking a civilian record and equalling the national record for the gallery .22 caliber timed fire course, Captain L. E. Wadman, of Mill Valley, stole the show at the Tamalpais Revolver Club matches on the Alto, California, indoor range December 5. Some 50 registrations marked the tourney. Wadman fired his big score in the opening match, scoring 199 x 200, one point higher than the old civilian record and equalling the police and national mark. K. Schaugaard, San Francisco, H. E. Smith, Mill Valley, and J. H. Marten, San Francisco, were other individual class winners in the match. The Tamalpais Club No. 2 team won the team match.

Central Illinois Pistol: Clyde Townsend had a field day in his home town in this November 9 match, winning the .22 caliber timed fire, the center fire timed fire, the center fire National Match Course, the Center Fire Aggregate and the Grand Aggregate in addition to four Sharpshooter medals. Glen Irwin, Springfield, took first in the .22 rapid fire and .22 Aggregate, two second and four third place awards to gain second high honors. Joliet's Dwight Witt made off with most of the Marksman honors plus a victory over all comers in the .22 caliber slow fire. Chris Kalapis, Decatur, and Robert Knapp, Elwood Ordnance plant, were other high scorers. The match was sponsored by the Central Illinois Rifle League.

Election of Officers Pistol: Between them, Arnold Meloche, Lee Echols and Norman Adair took about all there was to take at the State Pistol Association's Election of Officers Pistol Tournament at Tucson, Arizona, November 9. Meloche plugged along for the six events, winning one and bowing to either Adair or Echols in the others, yet, at the same time, amassing a National Match Course aggregate score of 853 points. Adair had 845, Gordon Smith 841, and Echols 827. Adair led off with a 296 to win the any caliber police course event; Echols took the .22 caliber timed fire, the center fire National Match and center fire police course events; Adair came back to cop the .45 caliber National Match. In the business of the day all 1941 officers were reelected—Meloche, president; Weiss, vice-president; Lerua, vice-president; McMahan, vice-president; Hathaway, secretary-treasurer; Ekiss, statistical officer; Trowbridge, chief range officer, and Stowe, range officer.

Pacific Southwest Rifle: Lanky Bob Perkins of Fresno, state small bore champion, added the 1941 Pacific Southwest crown to his collection in the annual title tournament of the Glendale Rifle and Revolver Club at their Glendale, Calif., range. Sam Lear, Vallejo, defending titlist, was second with 2385 to Perkins' 2389-139X points. The Los Angeles Rifle and Revolver Club carted off the four-man team title with 791-40X, ahead of the San Diego quartet. Lear, with two individual match victories, Perkins, Lewis Phillips of Burbank, and Otto Marckmann of Glendale, paced the day's firing.

Oakland 100 Yard Indoor: Robert Perkins, of Fresno, fired the highest ranking of three possibles to win the California State 100 yard indoor championship October 19 at Oakland. Eighty competitors trailed in the match sponsored by the Oakland Rifle Club as Perkins totalled 100-78X, one X over Ivan Waddell and 13 over Mrs. Waddell in third. Earlier, Sam Lear of Vallejo copped the City of Oakland match with 200-18X; Waddell won the California Metropolitan Match with 500-43X; C. R. Inman, Vallejo, won the C. W. Turner Memorial Match with 300-24X, and the Santa Barbara Rifle Club, with 800-56X, edged the Capital City Rifle Club foursome by one X in the team match. A non-registered event, there are indications that this tournament will, in the future, join the ranks of the registered.

Kent, Ohio, Rifle Club members used this means of selling the target sport to their community and, at the same time, of demonstrating their preparedness in this emergency. The unusual float attracted wide attention in a recent parade staged at Kent.

Glenside Gallery: The newly-organized Glenside Rifle Club in Glenside, Pa., ushered in the season with its first registered match. Held on the club's 50 foot range in the Glenside Memorial Building December 4, 5 and 6 the tourney attracted 49 competitors for the three events. The first test, a two-man team event, 30 shots each, metallic sights, was won by W. H. Bahrenburg, Jr., with a score of 300 plus nine 10's, and Lawrence F. Moore, with 300 plus 205-10's, for a team total of 600 plus 214-10's. Bahrenburg also was a winner in the second match, 30 shot individual, with 300-177-10's which created a new national record of 207 consecutive 10's. The previous record had been 174 consecutive 10's. Match Number 3 was an aggregate of the two events and was won easily by Lawrence Moore with a score of 600 plus 205-10's. Moore, incidentally, had been unfortunate enough to fire his score of 300 plus 205-10's in the first match instead of the second. Having been fired in a team match, it could not count as a national record despite the fact it was higher by 28-10's than Bahrenburg's fine string.

Mississippi Valley: Dr. Emmet O. Swanson, flashing his old time form, dominated this indoor rifle tournament held December 7 at the University of Minnesota Rifle Range. He copped the Grand Aggregate with 586, including a standing score of 94. He led his team to victory with a personal count of 393, including a standing score of 97. Swanson's Minneapolis Club totalled 1535 to lead eight other entries. The Austin (Minn.) Club was second, nine points back. Other aggregate winners were Elmer Franzen, Minneapolis, high Expert; Basil Irwin, Mora, Minn., high Sharpshooter, and Warren Posthumus, University of Minnesota, high Marksman.

Walter A. Ballard

Rifleman and rifle maker, Mr. Ballard passed away in Columbus, Ohio, November 30. Mr. Ballard was with the Stevens Arms Company in the days of Harry Pope and also was connected with the Newton (Buffalo) Arms Company. He was a member of the Walnut Hills Rifle Club of Boston and the old Golden Gate Rifle Club of San Francisco in the 1890's. He designed and built the Ballard Loading Tool which was one of the early press type tools. Mr. Ballard travelled extensively and he knew and had competed with most of the old time off-hand marksmen.—RAY BRACKEN.

Brig. Gen. F. E. Evans

General Evans, retired from the U. S. Marine Corps, died at the Pearl Harbor Naval Hospital, Hawaii, November 25 of complications following bronchial pneumonia. He was 65 years of age.

Born in Franklin, Pa., General Evans was an active shooter in the early years of his service. Commissioned as a Second Lieutenant in 1900, he retired as Captain in 1905 after firing on and captaining the Marine Corps Rifle Team for two years. A Distinguished marksman, he was appointed Adjutant of the American Palma Rifle team in 1907 and of the American Olympic Rifle team in 1908.

He entered World War as Major; came home as Lieutenant Colonel, and was elevated to Brigadier General on retired list in 1940.

MATCH SPONSORS URGED TO CHOOSE DATES EARLY

Every sponsor of a Registered Tournament wishes to avoid holding a match on a date conflicting with a similar tournament nearby, and to arrange their date with a minimum of letter writing. With the yearly increase in Registered Tournaments (372 were held last year) conflicts are becoming more difficult to avoid and sometimes several letters are necessary to establish a satisfactory date for a tournament when the planning is started late in the season.

In the past it has been necessary to restrict Coming Events to one month advance publication on all but the larger tournaments. That policy will no doubt have to be continued this year for, from present indications, 1942 will see more tournaments than ever before.

However, in order to assist tournament sponsors in selecting their 1942 tournament dates with a minimum of correspondence we are *this month* carrying a complete list of all tournaments for which 1942 dates have been reserved. If you haven't already started plans for holding this year's tournament go over the Coming Events now—select a time when no tournament which would conflict with yours is scheduled and write the N. R. A. *at once* to make the reservation. Then start all other preparations and have the tournament completely arranged as far in advance of firing day as possible.

We wish to avoid all date conflicts this year and can only do so if you will help.

OUR THANKS

All too frequently we civilians are prone to accept with just a hasty word of thanks the assistance given in our tournaments by members of the regular services. We fail to realize that in many cases the officer is giving up his week-end rest and many times goes to some personal expense as well. Our thanks and appreciation then to the following members of the regular services who served as Official Referees during 1941 and to their Commanding Officers who made that service possible. We sincerely appreciate this assistance and know that every shooter in the country does likewise.

Lt. Col. George S. McCullough, U. S. A., Berkeley, California; Lt. Col. Lloyd Spooner, U. S. A., Hays, Kansas; Major Earl S. Piper, U. S. M. C., Mexico City, Mexico; Major W. W. Davidson, U. S. M. C., Honolulu, T. H.; Major Charles G. Rau, U. S. A., Fort Benning, Georgia; Major Charles Densford, A. C., Orlando, Florida; Captain Chester R. Allen, U. S. M. C., San Diego, California; Captain Carl Jolly, U. S. M. C., San Diego, California; Captain Lee Herrington, A. C., Keesler Field, Mississippi; Lt. E. F. Sloan, A. C., Portland, Oregon; Chief Marine Gunner Calvin A. Lloyd, U. S. M. C., Washington, D. C.; Sergeant K. W. Cruse, U. S. A., Minneapolis, Minnesota.

NOTICE

Will the party who several years ago purchased from R. C. Langguth of 2007 W. Fargo Avenue, Chicago, Illinois, a Becker Analytical Balance please communicate immediately with R. C. Langguth, now at 312 McOmber Street, Dowagiac, Michigan.

COMING EVENTS

The four classes of registered tournaments are indicated as follows: **AA**—National Matches; **A**—Regional; **B**—State Championships are large District Matches; **C**—Local. *Unregistered* matches are not coded. Classification of competitors for prize awards indicated by code and asterisk—**C***, etc.

JANUARY

RIFLE

4 Connecticut, C*, .22 Caliber Rifle Match, New Haven. L. M. Ahlberg, Middlefield.
15–17 Pennsylvania C*, Nester Club Four Position Rifle, Norristown. Bruce W. Duddy, Whitehall Road, Norristown.
17–18 Illinois, Central Illinois Rifle League, Springfield. Joe L. Bennett, 200 E. Ash Street, Springfield.
18 Oregon C*, Portland Gallery Rifle, Portland. E. L. Plogg, 1911 Ankeny Street, Portland.
24–25 New York, Richmond Hill Rifle Club Gallery, Brooklyn. Roy Schwarzkopf, 104-45 125th Street, Richmond Hill.
30 Georgia, C*, Gainesville Rifle, Gainesville. William E. Fennell, Gainesville.
31 Pennsylvania C, Reg. Junior Rifle, Oakmont. James Affleck, Box 2038, Pittsburgh.
31 & February 1, New Jersey, Greater Newark Rifle, Newark. T. R. Amos, 140 Roseville Avenue, Newark.
31 & February 1, Ohio C, Cuyahoga Civilian Marksman Association Gallery Rifle, Willoughby. D. A. MacRitchie, 1884 Lampson Road, Cleveland.

PISTOL

9 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Box 854, Mill Valley.
17–18 Massachusetts, 7th Annual Gallery Pistol, Beverly. David C. McNeill, 33 Beckford Street, Beverly.
17–18 West Virginia C*, Registered Gallery Pistol, Fairmont. A. M. Springer, P. O. Box 204, Fairmont.
18 Wisconsin C*, Milwaukee Gallery Pistol, Milwaukee. Leonard P. Yelg, 1028 South 36th Street, Milwaukee.
25 District of Columbia, C*, Gallery Pistol, Washington. Leon Cool, Tremont Gardens, Falls Church, Virginia.
25 Iowa, C*, Registered Pistol, Davenport. Sergeant D. A. Thimmesch, West Liberty.
31 Georgia, C*, Gainesville Pistol, Gainesville. Wm. E. Fennel, Gainesville.
— California, S. F. Traffic Police Monthly Pistol, San Francisco. (Discontinued until Further Notice.)

FEBRUARY

RIFLE

1 Connecticut, C*, .22 Caliber Rifle Match, New Haven. L. M. Ahlberg, Middlefield.
7–8 New York, B*, Niagara Frontier 100 Yard Small Bore, Buffalo. D. B. Hilliker, 257 Fayette Avenue, Kenmore.
18 Oregon, C*, O. S. R. & P. A. Gallery, Portland. E. L. Plogg, 1911 Ankeny Street, Portland.
20–21 Ohio, B*, 17th Annual Ohio Gallery Rifle, Columbus. C. I. Greer, P. O. Box 123, Barberton.
21 North Carolina, C*, Charlotte Rifle, Charlotte. John Pierczynski, 1221 East 36th Street, Charlotte.
21–22 New York, Metropolitan Rod and Gun Club, Brooklyn. Charles Brownell, Jr., 162 Pacific Street, Brooklyn.
22 Illinois, C*, Registered Gallery Rifle, Rockford. Dr. S. A. Oren, 907 Talcott Building, Rockford.
22–23 Massachusetts, 9th Annual Gallery Rifle, Beverly. David C. McNeill, 33 Beckford St., Beverly.
27–28 March 1, Connecticut, Annual Gallery of State Rifle and Pistol Ass'n, New Haven. L. M. Ahlberg, Middlefield.
—— New York, Metropolitan Rifle Matches, New York City. Austin C. Huffman, Nyack, N. Y.

PISTOL

13 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Box 854, Mill Valley.
15 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco. E. J. Dutil, 324 Sixteenth Avenue, San Francisco.
20–21 New Jersey, Hudson County Mid-Winter Gallery Pistol, Hoboken. Edmund Engleke, 1314 Tenth Street, North Bergen.
20 North Carolina, C*, Charlotte Gallery, Charlotte. John Pierczynski, 1221 East 36th Street, Charlotte.

MARCH

RIFLE

8 Oregon, C*, Registered Gallery, Medford. Ivan K. Waddell, P. O. Box 1046, Medford.
11-15 Florida, *, National Mid-Winter Rifle, St. Petersburg. T. F. Bridgland, 2742 Second Avenue, South, St. Petersburg.
13–15 Illinois, C*, Midwest Gallery Rifle, Chicago. Roy E. Gaut, 501 East 88th Place, Chicago.
14–15 Ohio, C*, N. C. Ohio Gallery Rifle, Ashland. W. E. Echelberger, 318 Prospect Street, Ashland.
15 Connecticut, C*, .22 Caliber Rifle, New Haven. L. M. Ahlberg, Middlefield.
27–28 Connecticut, Annual Gallery of State Rifle and Pistol Ass'n, New Haven, L. M. Ahlberg, Middlefield.
28–30 Illinois, B*, University of Chicago Indoor Dewar, Chicago. Russell Wiles, Jr., 5830 Stony Island Avenue, Chicago.

(*Continued on page* 46)

MUNHALL HIGH AGAIN WINS JUNIOR CLUB MATCHES

The junior rifle teams of Munhall High School, which have been beating the best squads of young marksmen in the country for lo these many years, were no better than the current edition.

The 10 "man" team representing the school just outside of Pittsburgh, Pa., has just captured the first series of four matches in the N. R. A.'s Junior Rifle Club Matches from 289 other hopefuls with a perfect score of 2,000 x 2,000 points. This is four points more than that of the Defending Champion Xavier High School (N. Y.) boys squad. It is only six points more than Munhall's second team which finished third.

The winning group from Munhall is composed of seven girls and three boys: Jack Steimer, 17; Fred Gabory, 17; Jack Reich, 18; Virginia David, 16; Jean Savage, 15; Catherine Crawford, 16; Ruth Diller, 17; Jean Garland, 16; Marjorie Prosser, 17; Peggy Lou Harkins, 16.

STOLEN GUNS

Remodeled Winchester model 63, .22 L. R. autoloading rifle, serial 40407A. Stock and forend of fancy figured American Walnut; elaborately checked cheek piece; loads through trapdoor in special bakelite butt plate; special single lever side mount; model 29S Weaver scope; picket reticule. $25.00 reward will be paid and no questions asked for return or $50.00 for return with information leading to apprehension of thief. Address William E. Woody, 427 West Sixth St., Kansas City, Mo.

Three improved Model 52 Winchester rifles, Serials—11311, 8878, 44288. Stolen sometime since last spring from Arcola Public School, Arcola, Ind., after guns were oiled and locked in gun case in basement of school. Notify Ralph W. Young, principal.

Two U. S. rifles, caliber .30, loaned by the D. C. M. Serials—1389105 and 1385101. Model 1903. Stolen November 2 from Siren Rifle Club, Siren, Wisconsin. Notify C. O. Rasmussen, Secretary, Siren Rifle Club, Siren, Wisconsin.

Model 81-A Remington .300 caliber Savage automatic deer rifle, Serial 16279. Stolen from store in Ann Arbor, Michigan, around November 10. Notify M. Lenio, 123 W. Huron Street, Ann Arbor, Mich.

Found! .35 caliber Remington pump rifle between Port Allegany and Coudersport, McKean County, Pennsylvania. Contact H. E. Helwig, 1212 Logan, N. W., Canton, Ohio.

CHALLENGES

The Piscataqua Rifle and Revolver Club, of Portsmouth, New Hampshire, is asking for shoulder-to-shoulder rifle or pistol team competition with clubs in New England. Contact Walter B. Redden, Secretary, Piscataqua Rifle and Revolver Club, 149 Crescent Way, Portsmouth, New Hampshire.

The California (Pa.) State Teachers College Rifle Club wants postal matches with any state teachers college up until May 1. The conditions: distance 50 ft. gallery; metallic sights; 10 shots each, prone, kneeling, and standing; high 5 of 10 shooters to count. Address Dr. S. M. Neagley, % college, California, Pa.

(*Continued from page 45*)

PISTOL

7–8 Ohio, B*, Summit County Pistol League, Akron. J. C. Kelsey, 133 Highpoint Avenue, Akron.
13 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Box 854, Mill Valley.
14–15 Ohio, C*, N. C. Ohio Gallery Pistol, Ashland. W. E. Echelberger, 318 Prospect St., Ashland.
15 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco. E. J. Dutil, 324 Sixteenth Avenue, San Francisco.
17–21 Florida, *, National Mid-Winter Pistol, Tampa. C. A. Brown, Hotel Thomas Jefferson, Tampa.
22 Ohio, B*, 17th Annual Ohio Gallery Pistol, Columbus. C. I. Greer, P. O. Box 123, Barberton.
24–28 Florida, *, Miami International Open Pistol, Miami. Clem Theed, P. O. Box 363, Coconut Grove, Miami.

APRIL

RIFLE

4–5 Massachusetts, 7th Annual Junior Rifle, Beverly. David C. McNeill, 33 Beckford Street, Beverly.
5 Connecticut, C*, .22 Caliber Rifle Match, New Haven. L. M. Ahlberg, Middlefield.
18–19 Ohio, C, 11th Annual Ohio Gallery Rifle Team, Columbus. C. I. Greer, P. O. Box 123, Barberton.
19 Connecticut, Sofley Memorial Match, New Haven. Joseph Morin, 221 White St., Hartford.

PISTOL

10 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Box 854, Mill Valley.
19 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco. E. J. Dutil, 324 Sixteenth Avenue, San Francisco.

MAY

RIFLE

30–31 Oregon, B*, Medford Rifle, Medford. Ivan K. Waddell, P. O. Box 1046, Medford.

PISTOL

4 California, B*, Annual West Coast Pistol, San Diego. R. S. Pease, Route 3, Box 84, San Diego.
8 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Mill Valley.
17 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco.

JUNE

RIFLE

7 New York, C*, Forbes Rifle Club, Rensselaer. Henry W. Ristau, 38 Walker Street, Rensselaer.
8 Kentucky, C*, Registered Rifle, Louisville. H. M. Wheat, 4633 South First Street, Louisville.

PISTOL

12 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Mill Valley.
21 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco.

JULY

RIFLE

19 New York, C*, Annual Registered Rifle, Rensselaer. Henry Ristau, 38 Walker Street, Rensselaer.

PISTOL

10 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Mill Valley.
19 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco.

AUGUST

PISTOL

1–3 California, B*, S. W. International Pistol, San Diego. R. S. Pease, Route 3, Box 84, San Diego.
14 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Mill Valley.
16 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco.

SEPTEMBER

PISTOL

11 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Mill Valley.
20 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco.

OCTOBER

PISTOL

9 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Box 854, Mill Valley.
18 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco.

NOVEMBER

PISTOL

13 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Mill Valley.
15 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco.

DECEMBER

PISTOL

11 California, C*, Tamalpais Pistol, Alto. Frances L. Wadman, Route 1, Mill Valley.
20 California, C*, S. F. Traffic Police Monthly Pistol, San Francisco.

DOPE BAG ☆ ☆ ☆ Conducted by F. C. NESS

THIS MONTH:

.270 Winchester · .270 Magnum · .278 Magnum · Custom Bullets · 7-mm. Mauser · 7-mm. Newton · .276 Magnum · Lead Alloy Loads · .275 H & H Magnum · Handloads · .276 Dubiel Magnum · .276 Experimental · Drop Dope · Impact Table · Krag-Niedner History · Special Loads · Eliminating Fliers · Reloading Kinks · Trade Dope

.265 O.K.H. Just a passing mention of the .265 O.K.H. which uses the 6.5-mm. bullet and develops between 2600 and 2800 f.-s. m.v. with the 165-grain weight. The lower velocity is obtained with straight loads, and the higher m.v. with O.K.H. loads. The only dope we have is that, in a Charley O'Neil test at 300 yards, the factory bullet printed 9 inches lower than the reshaped bullet. We also have very little dope on the .26-caliber B.S.A. whose case held 53 grains of smokeless and developed 3100 f.-s. m.v. with a 110-grain bullet. The chamber pressure was just over 40,000 pounds.

.270 Winchester: When this cartridge came out in the M-54 Bolt-Action rifle it was acclaimed by hunters, and its 130-grain bullet at 3160 f.-s. m.v. was considered to be one of the best for shooting running game, because very little allowance or lead was required with such a speedy bullet. At 100 yards this 130-grain bullet had more remaining velocity than 110-grain bullet of the .30-'06 Hi-Speed and more than the 180-grain bullet of the .300 Magnum for which latter caliber the light-to-carry and quick-to-aim M-54 Winchester was not made. The 110-grain .30-'06 bullet with a sectional density (W/d^2) of only .165 was not nearly as effective on game which required some penetrative ability on the bullet's part. The .278-inch 130-grain bullet has a sectional density of .242 which puts it in the class of a 160-grain .30-caliber bullet or of the 139-grain 7-mm. Furthermore the .270 Winchester has proven its ability to kill our very heaviest American game from Mexico to Alaska. It is about as effective on heavy game as the 180-grain bullet in the .30-'06.

The factory ballistics give the Western B.T. bullet 3065 f.-s. average velocity over 100 yards and a gravity drop of 2.00 inches over that range. Over 200 yards the drop is 8.00 inches and over 300 yards, 18.00 inches. In our own tests of this cartridge our drop figures closely agreed, being, respectively, 1.98, 9.56 and 25.62 inches. Western C. Co. also developed a 150-grain cartridge at 2800 f.-s. for mitigating some of the destructive effect of the regular bullet on edible venison. This heavier bullet has a remaining velocity of 2430 f.-s. at 100 yards and a drop of 2.52 inches. Its gravity drop is nearly a foot over 200 yards. The sectional density of this .278-inch 150-grain bullet is slightly greater than that of the .308-inch .30-'06 bullet of 180 grains.

In custom bullets and handloads the very heaviest bullet of which we have knowledge is the 10-caliber 164-grain Youngberg B.T. with a sectional density of .304, about that of the 7-mm. 175-grain bullet. Next in order is the 8-caliber 160-grain Barnes bullet, and the 8-caliber Barnes 140-grain followed closely by the Youngberg 8-caliber 136-grain bullet. These latter two are in the class of the M1 173-grain B.T. Service bullet in sectional density as well as nearly so in the matter of ballistic efficiency. Byron Cottrell tried the W.T.&C.W. and Barnes (160-grain) pointed bullets in 1940, using 53 grains of No. 4350 powder in the .270 Winchester. The velocity he reported was 2800 f.-s. m.v. and he said these bullets were very flat-shooting beyond 200 yards. He used R.A. No. 9½ primers in these loads.

Early in 1939 we got some Youngberg bullets for the .270 Winchester which he had made from the M2 Service bullets. He reported shooters had obtained 1¾ and 2-inch groups at 200 yards, but that a 12-inch check group at 600 yards indicated the standard 10-inch twist was not quick enough for long-range stabilizing of these long-pointed 135- to 140-grain bullets. When we tried these (136-grain) bullets in our M-70 we obtained about the same accuracy as with factory ammunition; that is, a little more than a two-minute spread. The 164- and 165-grain Youngberg B.T. bullets, made from the M1 Service bullet, are too heavy for the .270 Winchester and too long for its 10-inch twist, but they are fine for the .270 Magnums.

Next in order were the W.T.&C.W. bullets of 145- and 130-grain weight. The latter had a 6-caliber head and the former a 4-caliber ogive. These were very good game bullets and accurate on the target. We used 47 grains of No. 4064 with the heavier bullet and 50 grains of No. 4320 with the 130-grain bullet. The latter was the better. Our seating depth was .390 and .380 inch, respectively. We went up to 54 grains of No. 4320 with the W.T.&C.W. 100-grain bullet and up to 54.5 grains with the 95-grain bullet. These were loaded with modern N.C. primers. Our loads with HiVel No. 2 were 48.0 grains and the 95-grain bullet and 46.5 grains with the 136-grain. With N.C. primers the maximum loads of HiVel No. 2 develop 55,000 pounds pressure and therefore they are not playthings suitable for careless people. These Hercules loads are 48.8 grains with the 95-grain W.T. &C.W. bullet and 47.8 grains with the 130-grain factory bullet, using a seating depth of .319 inch with the latter and only .220-inch with the other.

The Winchester factory came out with a 100-grain pointed-bullet high-velocity cartridge, which I tried on the target up to 500 yards, and later at 600 yards. It made an 18-inch group, but I was lucky enough to hit and kill a woodchuck on the third shot at 600 yards after elevating my Fecker scope 32 clicks above the 200-yard zero. This bullet had an m.v. of 3540 f.-s. and a mean velocity of 3375 f.-s. over the first hundred yards with a gravity drop of 1.60 inches. The factory figures gave it a 6-inch drop over 200 yards and half a yard for 300 yards. My own range shooting agreed closely, with .37 inch at 50 yards, 1.61 inches at 100 yards, 8.85 inches at 200 yards and 19.09 inches at 300 yards. Our accuracy tests with this cartridge ran to 2½-minutes spread quite uniformly. The pointed W.R.A. bullet was well-shaped with a 6-caliber ogive, but its light weight gave it a sectional density of only .186. There was also a Western 100-grain S.P. bullet with a 4-caliber head. This gave us about the same degree of accuracy in our group shooting.

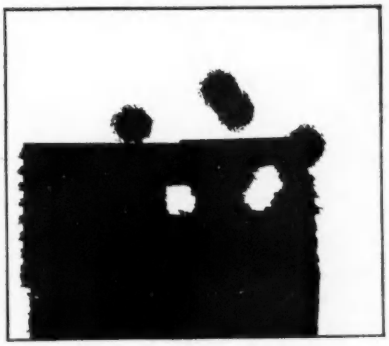
For some additional drop dope: we got 9.56 inches at 200 yards with the factory 130-grain B.T. ammunition and 9.74 and 9.25 inches with the 100-grain and 130-grain W.T.&C.W. bullets. The latter load has already been given, but the other was 51.7 grains of No. 1185 powder. With the 140-grain Barnes bullet our 200-yard drop was 6.84 inches, with 1.78 inches at 100 yards and 24.19 inches at 300 yards. The factory drop figures for the 150-grain S.P. cartridge are: 2.52 inches at 100 yards, 11.88 inches at 200 yards and 31.28 inches at 300 yards. Our best load with No. 4350 powder was 49.0 grains behind the 140-grain Barnes.

The old loads with old style, or F.A. No. 70, primers were: 47 to 52 grains (3200 f.-s.) of No. 17½ and up to 58 grains (3360 f.-s.) of No. 15½ powder behind the 100-grain bullet seated .225-inch deep. Also 44 to 50.0 grains of No. 17½ and up to 55 grains of No. 15½ powder (3160 f.-s.) behind the 130-grain bullet with a seating depth of .30 inches. This latter load is the equivalent of 52 grains No. 4320 powder, but the charge must be cut at least 2½ grains when modern N.C. primers are used. See the group, with 55 grs. 4320.

Unfortunately, there are no cheap jacketed bullets which may be used for midrange or reduced loads in the .270 Winchester caliber. We have had fair success with lead-alloy cast bullets, however. The best were: the B. & M. 111-grain gas-check and 10 grains of No. 80 or equivalent loads of Unique, Bulk Shotgun or pistol powder. The Loverin-Bond 111-grain gas-check No. 280780 worked fine with 17.5 grains of No. 4198 and 23.0 grains of No. 3031. The Gipson 136-grain gas-check worked well with the latter load, and 18.0 grains of No. 4198 proved best with the 103-grain Gipson gas-check.

The .270 Winchester is a necked down .30-'06 and the .30-'06 headspace gauges and plugs can be used interchangeably with the two cartridges and in the two rifles. The rifle has a .278-inch groove diameter against .308 inch for the .30 caliber, and even 7-mm. bullets are too large for the .270 Winchester. The recoil of the .270 Winchester is about equal to that of the .30-'06 in the same model of rifle, but the former is loaded to a pressure limit 2000 to 3000 pounds higher than for the .30-'06 making standard .270-W loads

Below: A group with the .270 Winchester and 100-gr. W.T. & C.W. bullet; Page 48: 7-mm. and lead alloy; Page 49: 7-mm. and Mexican F. de M. All of the groups shown were fired with handloads at 100 yards



akin to the heaviest .30-'06 loads. Standard factory bullets just miked ran, .2765 to .2775 inch.

* * *

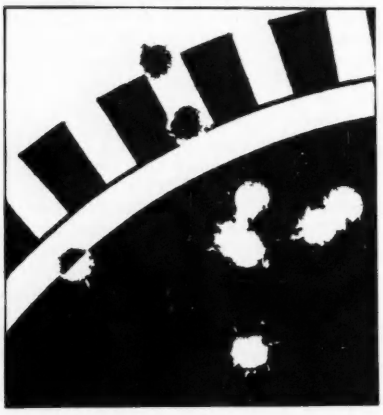
.278 Magnum is a good designation for those over-size custom cases necked down for .278-inch bullets and based on the .270-Winchester barrel. Vernor Gipson wrote me back in 1937 he had just completed his .278 Magnum for Byron Cottrell in time for the Pennsylvania deer season. This rifle had an M-1917 action, a 26-inch Niedner barrel with a 12-inch twist, and it used the .300 H. & H. Magnum case necked down for the .270 Winchester bullet. The loads were from 55.5 to 58 grains of No. 4064 with the 130-grain O.P. bullet, and velocities as high as 3100 f.-s. were anticipated with the 145-grain bullet. A few months later he wrote about a 61-grain load behind the 100-grain bullet and of very good long-range results in practical game shooting.

Another year passed and Gipson wrote that he had been to Pennsylvania and witnessed kills on deer between 400 and 600 yards with his .278 Magnum. He said they were clean kills. The loads reported as used were 56 grains of No. 4064 with the 130-grain Winchester bullet and 54.5 grains with the 145-grain W.T.&C.W. bullet.

* * *

.270 Magnum. I understand similar .270 Magnum custom rifles and cartridges have been built on the .30 Newton case. One of these was a .270 Newton Magnum rifle based on the .30 Newton case, built by the Niedner Rifle Corporation for Byron Cottrell in 1940. It had a 26-inch barrel, and Cottrell reported some fine chronographed velocities in the March 1941 AMERICAN RIFLEMAN. These were all with R.A. No. 9½ primers and No. 4350 powder, Lot No. 4, and .270 Winchester caliber bullets. With the 130-grain W.T.&C.W. bullet from 66 to 71 grains were used, giving 3419 to 3609 f.-s. With 67 grains the 150-grain Barnes bullet developed 3200 f.s. With the 160-grain Magnum bullet 67 grains made 3242 f.-s. Both Fred N. Barnes and the Western Tool & Copper Works made a 160-grain spitzer bullet for Magnum loads at that time.

7-mm. lead-alloy, 100-yd. groups



Impacts Obtained By Shooting
(With 300-Yard Impact On Aim)

Cartridge	*Bullet*	*Load*	*50 Yds.*	*100 Yds.*	*200 Yds.*
.270 Winch.	100-gr. Pt'd. W.	R. A. Factory	1.46 high	3.67 high	3.34 high
" "	" WTCW	51.7 grs. 1185		2.72 "	3.34 " *
" "	130-gr. B. T.	W. C. Co. Factory		5.84 "	7.08 "
" "	" WTCW	50.0 grs. 4320		4.79 "	7.08 " *
" "	" "	" "		4.81 "	
" "	140-gr. Barnes	" "		5.66 "	9.22 "
7-mm. Mauser	145-gr. "	38.0 grs. 3031		7.94 "	8.83 "
" "	175-gr. Pt'd. F de M	Arsenal		8.95 "	10.06 "
" "	180-gr. Barnes	40.0 grs. 4320		8.23 "	9.36 "
" "	" "	36.5 " "		9.64 "	10.70 "

(First load was fired with scope 1.625 inches above bore; all others, 1.175 inches)

* Fired only up to and including 200 yards.

7-mm. Mauser is another rimless bottleneck cartridge with less capacity than the .270 Winchester and a bigger bullet and greater groove diameter; about .284 inch. The 7-mm. sporting ammunition develops moderate pressures and its rifles are mild in recoil, and in this respect the caliber is in the general class of the .250 Savage and .257 Roberts. As the .250 Savage is a modified .30-'06, the .257 Roberts is a necked down 7-mm. This 7-mm. caliber is widely used as a military cartridge, especially by Latin American countries. It is favorably known here as a game cartridge and comes near to being an all-purpose caliber. However, there are no cheap jacketed bullets available, and for reloading and varmint shooting it cannot compete with the .257 Roberts.

The recently reinstated W.C. Co. 139-grain O.P. cartridge is given 2850 f.-s. m.v. and a remaining velocity of 2635 at 100 yards. It is a popular one for deer, antelope and sheep hunting. The bullet has a sectional density of .244 and an average velocity of about 2745 f.-s. over the first hundred yards with a gravity drop of 2.24 inches. The 200-yard drop is 9.88 inches, and it is 24.40 inches over 300 yards. It is slightly less accurate than the 175-grain bullet, the standard weight.

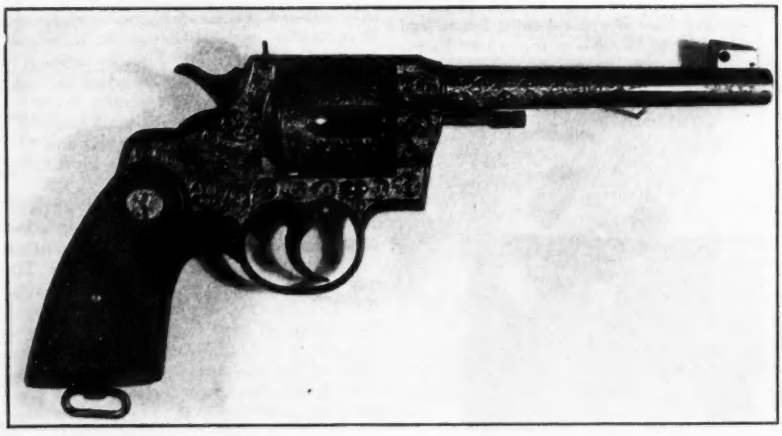
The old 175-grain ammunition had an m.v. of about 2300 f.-s. with an average velocity of less than 2000 f.-s. over the first hundred yards. The factory drop figures were: 3.60 inches at 100 yards, 16.00 inches over 200 yards and 39.60 inches over 300 yards, while for the new m.v. of 2460 f.-s. they are: 3.20, 14.00 and 36.00 inches, respectively. Remington ballistics give their Express load 2550 f.-s. m.v. with a gravity drop of 12.00 inches at 200 yards and only 30.00 inches over 300 yards. This is the most powerful sporting load. The 175-grain cartridge has been used successively on all American big game. The sectional density of this bullet is .309 which puts it in the class of a 200-grain .30-caliber bullet.

There is also a well-shaped 150-grain Winchester load whose pointed bullet is given an m.v. of 2750 f.-s. and an average velocity of 2650 f.-s. over a hundred yards with a drop of 2.40 inches. The bullet drop for 200 yards is 10.00 inches, and it is 26.00 inches over 300 yards. The sectional density is .265.

The custom bullets which we have tried in our handloads are: the Barnes 145-grain 6-caliber pointed bullet and his 180-grain S.P. 8-caliber pointed bullet. There is also a Barnes 195-grain 4-caliber pointed bullet which has a sectional density of .344, and which places it above the 225-grain .30-caliber bullet. This one is too heavy for the 7-mm., but fine for the .276 Dubiel Magnum or 7-mm.-Newton Magnum. There is also a 6-caliber 160-grain W.T.&C.W. bullet which is a very fine one for both purposes. There is a very similar Barnes bullet of this same weight.

In our 7-mm. Model-70 rifle we used the

Tommy Foster, 1128 18th Street, Denver, Colorado, does a nice engraving job at moderate cost, we are informed by Irwin Kotek of Danville, Illinois. Kotek was out there and, to back up his recommendation, he sent a photo of his Colt O.M. .22 revolver after Foster had decorated it. See the picture and judge for yourself.



W.T.&C.W. bullet with 40 grains of No. 16 and with 39 grains of No. 3031 and with a heavier load of 40 grains HiVel No. 2. These were about as accurate as factory loads, but not as good as our best handloads. The most accurate bullets we tried were the 145-grain Barnes (with 37 to 39 grains of No. 3031 and 47 grains of No. 4350) and the 180-grain Barnes with the same loads. Groups ran about 2¼ minutes spread with these bullets and 2½ minutes with the others. The old factory ammunition spread about 3 minutes of angle. Our very best results were with the Mexican 175-grain military load which regularly shot into less than 2 inches at 100 yards. See the 100-yard group on this page.

We tried this Mexican load over 300 yards for bullet drop and got 38.76 inches. The drop was 15.38 inches at 200 yards and 3.18 inches at 100 yards. We also tried the 145-grain Barnes bullet with 38 grains of No. 3031 over 300 yards. The drop was 35.49 inches over that range, 11.26 inches at 200 yards and 3.07 inches over the first hundred. With both 36.5 and 40.0 grains of No. 4320 behind the 180-grain Barnes bullet we got greater drop at all ranges. The faster of these two loads dropped 4.73, 17.74 and 41.23 inches, respectively, over 100, 200 and 300 yards.

Handloads recommended for the 7-mm. Mauser with modern primers are: 37 to 42.5 grains of No. 3031 behind the 139-grain bullet and 35 to 42 grains of No. 4320 or No. 4064 behind the 175-grain bullet. The seating depth for the latter is .40 inch and for the former, .25 inch. The equivalent loads of HiVel No. 2 are 31 to 42 grains with the 139-grain bullet and 30 to 39.8 grains with the 175-grain bullet. The seating depth with the 175-grain bullet is .363 inch. For the 150-grain bullet, 30 to 41.2 grains. Also for cast bullets, 15 grains (1320 f.-s.) to 30.0 grains (2185 f.-s.) with a 139-grain gas-check bullet. We tried the 124-grain gas-check bullet, No. 285448 and had fine results with 14.0 grains of No. 2400 and 17.5 grains of No. 4198. In fact, both these lead-alloy loads outshot our best jacketed bullets, the 20 shots going into less than 2 inches. The R.A. No. 8½ primer was used. See cuts on page 48.

* * *

7-mm.-Newton made by necking the .30 Newton case for .284-inch bullets is available through P.O. Ackley and Vernor Gipson. Both makers neck this case for .278-inch bullets also and, presumably, for .288-inch bullets as well. They also neck the belted Magnum cases for these bullets. Fred N. Barnes says that with his 160-grain bullet he can easily get 3200 f.-s. in his Ackley 7-mm.-Newton. All these big-capacity cartridges for the .270-.278-caliber bullets and for the 7-mm.-.285 caliber bullets are intriguing with their "souped up" ballistics and long-range effectiveness, but they are expensive playthings. The well-constructed heavy bullets which are required and the necessarily heavy powder charges are comparatively costly, but more costly are barrels because of their short accuracy-life with such loads. They are not to be considered by any one who likes to do a lot of shooting. Some of them, and perhaps all, will lose their initial "gilt-edge" accuracy by the time an ordinary rifle would be just reaching its peak performance, that is in a couple of hundred rounds, or about that.

.276 Magnum. Also back in 1937, Leonard L. Aurand wrote to me about necking down the .30 Newton case to .276 caliber. He used, also, an M-1917 action and a 12-inch twist, but in a 28-inch Sukalle barrel which tapered from 1¼ to ⅝ inch at the muzzle. He was getting "tremendous velocities", estimated at 3500 f.-s. with the 160-grain bullet and "close to 4000" with the 123-grain bullet, both of W.T.&C.W. make. His load was 63 grains of No. 4064 with the light bullet and 60.0 grains with the heavy bullet, for uniform pressures and easy extraction. Experimentally, he had gone up to 68 grains behind the 123-grain bullet. Trying his loads for penetration on a 13/16-inch gear blank both bullets pierced ¾ of the total depth and broke out the back at 50 yards. Then, using 1½-inch armor plate, both bullets made cavities ⅝-inch deep at 50 yards.

* * *

.275 H. & H. Magnum. This is a bottle-neck rimless belted factory cartridge. The W. C. Co. ballistics with 175-grain S.P. B.T. bullet are: 2690 f.-s. m.v. and 2450 f.-s. remaining at 100 yards, the average velocity for the distance being 2570 f.-s. with a gravity drop of 2.72 inches. The bullet drop is 11.60 inches over 200 yards and 29.04 inches over 300 yards. This is a glorified 7-mm. in a superior case.

A group at 100 yards with the 7-mm. and the Mexican 175-grain F. de M. military load

Loads for the .275 Magnum are: 51 to 54 grains (2930 f.-s.) of No. 15½ behind the 139-grain bullet and 49.5 grains (2525 f.-s.) with the 175-grain bullet. Also up to 56 grains No. 4064 with the 139-grain bullet and a maximum of 50 grains of HiVel No. 2 with the 175-grain bullet. The seating depth of the light bullet is .325 inch and for the heavy bullet .350 inch. Perhaps the best powder for the 175-grain bullet is No. 4350 with charges between 52 and a maximum of 57.0 grains. Proper primers are: the W.C.Co. No. 8½G, the W.R.A. No. 35 or the F.A. No. 70. The modern No. 120 and No. 9½ primers can also be used, but with these latter N.C. primers the heavier loads of No. 15½ must be cut 5%.

* * *

.276 Dubiel Magnum. This special sporting cartridge was made by the late John Dubiel on the .275 H. & H. Magnum belted case while he was at Ardmore, Oklahoma, in charge of the former Hoffman Arms Company there. Since the present firm of the same name, but located at Amarillo, Texas, have acquired much of the Dubiel tools and equipment, they can probably furnish rifles of this caliber. These can also be obtained from Griffin & Howe, (New York City) who very kindly furnished some load dope in this caliber. For the 160-grain bullet the G&H loads are: 52 grains of No. 15½ at 3000 f.-s. and 48 grains of No. 4064. With No. 4064 powder the maximum loads are: 46 grains with the 175-grain bullet, 51 grains with the 139-grain bullet and 53 grains with the 123-grain bullet. The normal velocity for this caliber is 2800 f.-s. for the 175-grain bullet.

Friend Jim Wilkinson, with whom I shared a tent in the Rockies last winter, gave me some chronographed dope on his own .276 Dubiel Magnum. With the W.R.A. No. 120 primer and No. 4064 powder he used 48 grains (2810 f.-s.) behind the W.C. Co. 139-grain O.P. bullet, 52 grains (3087 f.-s.) behind the Barnes 140-grain, and 48 grains (2763 f.-s.) with the Barnes 160-grain bullet. With No. 4350 powder he used 55 grains (2785 f.-s.) behind the 180-grain Barnes bullet and 52

Walter Roper makes adjustable target sights not only for the regular Colt Woodsman and Match Woodsman pistols, but also for the Hi-Standard target pistols as the accompanying cut shows. He installs the Roper M. T. Woodsman rear sight with self-locking click adjustments in both planes. Because this sight is higher than the Hi-Standard factory sight, he makes the front sight higher by fitting over it an under-cut ramp sight. The photo shows this sight and Roper stocks on Walter's own Model "D."

The Model D Hi-Standard with Roper Sights and Stocks

C. E. Ricketts whom you met at Perry as "Rick", the leather man, is shown at a local department store demonstrating for Hickok, the well known Rochester belt makers who have added a line of fine handtooled leather wallets, belts and braces (trimmed with Sterling silver) since "Rick" joined them.

grains (2671 f.-s.) with the 195-grain Barnes bullet. The two lighter bullets gave 3½ to 4-inch groups at 200 yards and the three heavy bullets, 3-inch groups. Jim said the 55-grain load with the Barnes 180-grain bullet was the best he ever used in that rifle. He used the 139-grain load on chucks and for practice. He had excellent results on deer in 1940 with the 160-grain load, but it happened to be a W.T.&C.W. bullet. It might be noted here that the Youngberg .278-caliber 164-grain bullet, mentioned previously as too heavy for the .270 Winchester, would be fine for the Magnum cases and loads.

* * *

.276 Experimental. Before passing on to the .280 Magnum calibers we might mention the Frankford Arsenal .276 rimless cartridge for early models of the Pederson and Garand semiautomatic rifles and the British .276 semi-rimmed cartridge for the 1914 Enfield bolt-action rifle, which rifle became the parent of our M-1917 rifle later. This British experimental cartridge of 1913 was very similar in case head and shape to the .30 Newton and the bullet weighed 165 grains, a veritable 7-mm.-Newton Magnum. The U.S. experimental cartridge was a neat little fellow very similar to the .25 Remington case, but with a 10-caliber 125-grain bullet. The ballistics closely agree with those of our .30 caliber M2 Service cartridge.

* * *

A. O. Niedner retires from the arena of active gunsmithing after nearly 60 years of it, having already severed all connections with the Niedner Rifle Corporation of Dowagiac, Mich. In fact, he has done no work for that firm since September 27, 1940. In his letter to me, Mr. Niedner says he feels grateful to all his old friends and customers and will be glad to hear from them at his home, 524 Main Street, Dowagiac, Michigan. He will, of course, undertake no work, but will be glad to give advice and suggestions. One of the high lights of his career was his direct association with the famous Dr. Mann during the last ten years of that scientist-rifleman's life when they conducted many experiments other than those made public in Dr. Mann's book on "The Bullet's Flight."

* * *

.25 Krag Niedner. A review of the early correspondence between A. O. Niedner and N. H. Roberts, makes it evident the latter obtained from Niedner the very first rifle he ever made for using the .25-caliber 86-grain commercial bullet in the necked down .30-40 Krag case. On November 21, 1910, Mr. Niedner had just finished a .22 chambering tool for Charles Newton involving the 6-mm. Lee-Navy case, and was working on tools for the .32-40 case necked to take .25-caliber base-band and commercial bullets, when he acknowledged Mr. Roberts order.

On November 30, nine days later, he wrote about having completed the new .25 Krag tools, about sending a sample case and requested Mr. Roberts' .25-caliber rifle for the conversion job. On December 2, 1910, Roberts sent to Niedner this rifle, a .25-25 Stevens No. 44½ with a No. 2 nickel steel barrel 30 inches long and cut with a 12-inch twist. On December 10, Roberts joined Niedner at the Walnut Hill range where the new rifle was tested. This first .25 Krag Niedner made for commercial bullets was tried with the U.M.C. 86-grain S.P. bullet and the No. 7½ U.M.C. primer. I have a true copy of the groups obtained at 50 and 100 yards that day in test No. 1, No. 5 and No. 6. The latter was best, in my opinion, because it has 10 shots at 100 yards in about 1⅛ inches, center-to-center, from machine rest. The powder charge was 30 grains of Lightning. This rifle, the first of a half-dozen in the same .25-Krag caliber accounted for by Mr. Roberts, was fired 4500 rounds before he disposed of it, on January 9, 1913. At that time erosion had enlarged its groups to about 2½ minutes spread.

* * *

I.M.R. No. 4350. A load is 59.0 grains in the .30-'06 with Barnes 125-grain heavy-jacket bullet or Barnes, reformed, .30-30-caliber, Peters bullets of the same make. The velocity at 25 feet is 3200 f.-s. In the .30-40 Krag the load is 49.2 grains, which fills the case, and the bullet is Ideal No. 311413 cast of zinc plus graphite-wad lubricant and copper gas check. Drilled ¼-inch deep with a 3/16-inch hole these zinc bullets weigh 114.8 grains. The velocity at 25 feet is 2681 f.-s. Both were used in fired Western cases with R.A. No. 9½ K.B. primers, and both rifles had 24-inch barrels and gave exceptional accuracy for fine vermin work. These loads were developed by Samuel P. Osgood.

* * *

Sharpshooter powder worked well in the .25-35, .250 Savage and .32 Winchester Special for C. B. Wyatt of Wrangel, Alaska, so he tried it in his .30-'06 Springfield, which had been fitted with a tightly-bored Winchester Bull-Gun barrel. His loads were: 14 grains with the 74-grain full-patch pistol bullet, 24 grains behind the 150-grain H.P. bullet and 30 grains behind the 172-grain B.T. bullet. These last two loads and also 50 grains of No. 4064 behind the 110-grain bullet were the most accurate. He had no luck at all with lead-alloy bullets or with the .32-20 80-grain H.P. bullet.

* * *

.30-'06 Loads found good by E. J. Wilhelm of Pittsburgh, are: 150-grain M2 Service bullets with 35.5 to 42.0 grains of HiVel No. 2 powder, and for deer hunting the 150-grain Bronze-Point with 45 to 47.5 grains of the same powder or 53 grains of No. 4320. The best groups with the M2 bullet and HiVel No. 2 were with 39.0 grains, 41.0 grains and 42.0 grains. The latter load was best of all when seated just to the bullet crease and with case-necks resized only that deep. The W.R.A. No. 120 primer was used in all loads.

* * *

Rabbit Load. On jackrabbits, D. Walter Davis, of Shafter, Nevada, recommends, to .30-'06 users, 13 grains of Unique behind the 109-grain gas-check bullet, No. 311359, sized .311-inch. He uses R.A. No. 9½ primers.

* * *

Sulphuric Acid does bullet lead no good, as was discovered by Robert Elrick of Petrolia, Pa. With economy in mind, he decided to salvage the lead lining of sulphuric-acid storage tanks which runs about 95% lead and 5% antimony. Although he used the upper part of the lining, above the level of the acid, it was impossible to mold bullets at any temperature or with any mixture including several pounds of tin which he wasted in trying to alloy the metal to a more favorable state. The original lining metal, tried before it had been subjected to the acid fumes, worked fine in his bullet mold. The lead-burner warned him about the hardening agent, tellerium, in lead, saying that it gave off poisonous fumes when melted.

A No. "O" buckshot with a 1/16-inch graphite base wad and top lubrication gave 1½-inch groups at 50 yards when fired in Elrick's scope-sighted M-1917 rifle with 4 grains of Bullseye pistol powder. He has a 219 Savage (S-S shotgun action) Hornet converted to the 2-R Lovell in which he loads 16.0 grains No. 4198 with the Sisk-Lovell 50-grain bullet and R.A. No. 6½ primers in Remington cases. The group he sent me was an even 1½ inches center to center; fired at 75 yards.

* * *

Kampen Gas Checks for lead-alloy bullets are as good as any commercially available we believe. We have used only a few of them, but Paul A. Young recommends them after extensive use. He says they are .310-inch diameter in .30 caliber, and .085-inch high. The price per M is very reasonable and the address is R. W. Kampen, 557 Pearl Ave., Rockford, Illinois.

* * *

Eliminating Fliers. A. J. Schubert, of Raymondville, Texas, has a reasonable and logical theory about melted cores, deformed bases and wild bullets. He believes the cooler combustion of his duplex loads have mitigated fusing of exposed bullet bases and eliminated melted cores, because his bullets do not expand upon impact to their former degree even at apparently higher velocities. Better still, he has eliminated fliers. This applies to the .256 Newton and a Sedgley, necked-down. .22 Hi-Power, Wild-cat

In the .22 Wild-cat he has no trouble getting minute-of-angle accuracy using the Weaver 440-C scope. His smallest group at 100 yards was less than ¾ inch. He has killed coyotes around 400 yards and hawks nearly that far. In his 24-inch barrel he uses 6.0 grains of No. 2400, a waxed paper separator and 22 grains of No. 3031 behind the Sisk-Lovell 50-grain (.2235 inch) and the Sisk-Magnum Express 55-grain (.2230 inch), the latter bullet being his favorite. It would probably work well with 6 grains of No. 4227 or No. 1204 in place of the No. 2400 primer charge. Such loads must be developed gradually and carefully to avoid any sudden jump in pressure.

These duplex loads do not appreciably heat the breech end of the barrel, and as a consequence Schubert believes his bullet cores remain unmelted and unharmed to insure a better balanced and more accurate bullet in flight. In turn, this preservation of the bullet's shape and internal condition promotes gyroscopic stability and also uniformity from shot to shot for the elimination of unaccountables. Schubert says he simply has no fliers with his duplex loads. His M-70 rifle was originally a .22 Hornet, whose bore continues to look like new. He only neck-sizes his fired cases.

* * *

Reloading Kinks. H. H. Buis, of North Platte, Nebraska, who has a .22 Wild-cat based on the .25 Remington case, says he cleans his primer pockets very conveniently with the head of a 6-penny finishing nail having some No. 60 brass gauze tightly wrapped about it and projecting about 1/16 inch. For a handle he shoved a hollow-point cast bullet over the point of the nail. Buis uses glass test tube for conveniently handling powder while weighing individual charges. A tap of the finger or a rotation of the tube

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controls the flow so well any desired amount can be dropped on the pan at a time, down to a single kernel.

TRADE DOPE

New Books. "Automatic Arms," in a limited edition, is now off the presses of William Morrow & Co. It is a big book of 18 chapters on the history, development and use of all multi-fire arms, including cannon, pistols and machine guns, old and new; so old it includes the first and so new it covers the latest developments in military arms. This is a timely book by Melvin M. Johnson, Jr., and Charles T. Haven. Phil Sharpe informs me the new revised edition of his "Complete Guide to Handloading" is now off the presses of Funk & Wagnalls Co. This edition of 36 chapters has 80 new pages. It, also, makes a timely appearance.

* * *

New Canadian Catalog of sporting and hunting equipment has been received from Ellwood Epps, proprietor, of Clinton, Ontario. Their No. 2 catalog is 8½ x 10½ inches in size and contains 48 pages, illustrated.

* * *

Instruction Manual of the Johnson Light Machine Gun, Type H, with 34 photographs and diagrams in its 95 pages, can be had at one buck from Johnson Automatics.

* * *

Special Cartridges are shown in actual size in a fine new circular issued by P. O. Ackley of Roseburg, Oregon. There are fifteen in a row, three of which are standard cartridges for direct comparison.

* * *

Foredom Electric Co. of 27 Park Place, New York City, make light-weight, flexible-shaft tools, similar to dental engines, costing from a dozen bucks up. They can be obtained in the West through Kent Snyder of Hayward, Calif. Snyder recommends Foredom tools after trial.

* * *

C. R. Wise of Charlestown, W. Va., announces the stream-lining of his 20-shot adapter magazine which is made to interchange with the floorplates of such bolt-action rifles as the M-1903, M-1917, M-70, M-30, and Mausers. It can be single-loaded or clip-loaded, and its maximum projection is 4½ inches below the rifle.

* * *

Walter L. Pierson, who has been with O. F. Mossberg Sons, Inc., for only 2½ years has been appointed Executive Vice-President of the firm. Mr. Pierson will continue in charge of sales, promotion and advertising. We first knew Walter when he was with the Marlin Firearms Co., of the same city. For a young man he has had a long experience in firearms.

* * *

Important. Do not write to Smith Custom Loads until further notice. J. B. Smith will be on active duty in the Navy by January 1, 1942. Send all orders for W-M 8-S bullets directly to Charles H. Morse, 517 Prescott St., Herkimer, N. Y.

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LETTERS

.270-W Loads. I would like to have information on the kind and weight of powder to use to obtain a velocity of 2750 f.-s. with the 130-grain Remington Open Point bullet in my .270 Winchester Model-54 rifle. Will there be any difference if the Winchester 130-grain Protected Point bullet is used at a velocity of 2450 f.-s. and 2000 f.-s.? Is the same powder used for the 2000 f.-s. muzzle velocity as for the 2750 f.-s. muzzle velocity? I wish to have less muzzle blast, less vibration and less noise. I shoot 150 to 200 yards only, using open sights.

What I would like to have is a smooth-shooting load for a 7½-pound gun that is too lightly barreled for regulation loads.—J. P. S.

Answer: Your idea of reducing recoil vibration while lowering muzzle velocity is perfectly feasible in the .270 Winchester. You would also gain a longer barrel life with your proposed load. A powder which is very flexible and therefore best adapted for your purpose is Hi-Vel No. 2. With this powder you should get even combustion, and, therefore, less muzzle blast, and better accuracy, as well as (in regular loads) equal barrel life. I would, therefore, recommend the following charges: 40.5 grains weight Hi-Vel No. 2 behind the Winchester or Remington 130-grain bullet to give 2750 f.-s. Use 38 grains for 2450 f.-s., and 30.0 grains weight for 2000 f.-s. in the .270 Winchester.

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ENFIELD, .30-06, very good to excellent, Stoegerized, French walnut, Hawkins pad, sling, M29S Weaver, $50.00. Charles Darwin, Cookeville, Tennessee. 1-42

D. H. E. PARKER, Trap, $100.00; Springfield Sporter Tiger Maple Stock, L-48, $75.00; Ithaca Field, $25.00; Mossberg Targo, $12.50. All very good. WANT—Winchester M97, K-22. Frank Wilkinson, 82 Monticello, Buffalo, N. Y. 1-42

MODEL H-E Hi-Standard, 6¾ inch, like new, $39.50. Croft Shooting Coats, sizes 38, 40, 42, Dewar type, $4.50 each, like new. G. H. Grant, Alamogordo, New Mexico. 1-42

ITHACA #5 Trap. Very good. 32" full, 14"-1⅝"-1⅞". Hawkins pad, $85.00. Evans Double Rifle, v.g. out, good in. 26", ejectors. Uses 405 Winchester cases necked to .303. Same ballistics as .30-06. Pacific dies for shaping cases and reloading. 85 loaded shells. $250.00. A. S. Anderson, 229 Ridgeway, Little Rock, Arkansas. 1-42

ITHACA 37R, 12, 26" Modified, Rib, never shot, $46.00. Winchester 12, 12, 30" Full, recoil pad, Marbles Semi-Rib, excellent, $45.00. 41 Swiss Sporter, $12.50. High wall 2R. 45-70 Springfield 24", $8.50. All delivered. Buy 19H, 70 Hornet, Swift, Target. Si Sharp, Slatyfork, W. Va. (Slatyford in Dec.) 1-42

U. S. MILITARY: Green's Ovalbore, perfect in, original finish, $30.00; 45-70 Remington-Lee, $10.00; M1841 Harper's Ferry rifle, $12.50; M1842 H. F. musket, $10.00; M-1859 Sharps Infantry rifle, $12.75; Smith Carbine, new, $7.50; Cosmopolitan Carbine, new, $7.50; many others, rifles, carbines, cadet muskets, conversions. Trades considered. WANT—M1917 revolver, 45 auto. Model 75 Winchester, M1917 Enfield. Wm. Hecker, 3570 Fairmount Blvd., Cleveland, Ohio. 1-42

ANSLEY H. FOX double 12 Krupp barrels, automatic ejectors, improved cylinders, good, $50.00. S&W .44 Special ivory bead and square notch, 6½ blue pearl grips, good, $25.00. WANT—Winchester 52 complete action only serial must be above 37,000. Good or better. Henry Eager, 3 South Andrews Ave., Fort Lauderdale, Fla. 1-42

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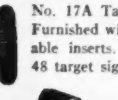

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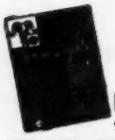

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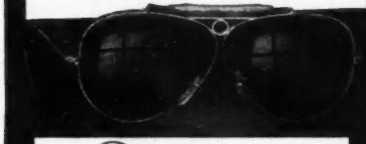

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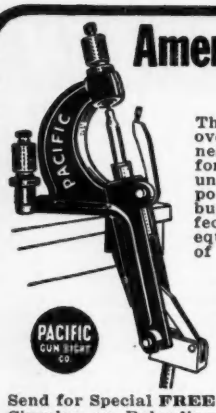

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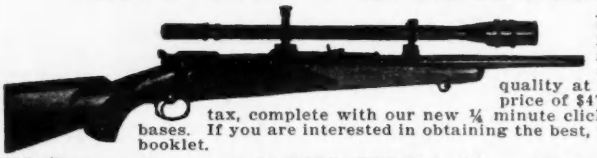

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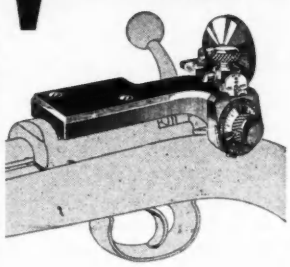

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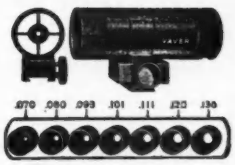

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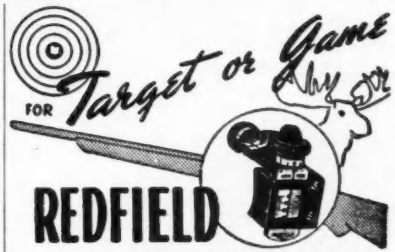

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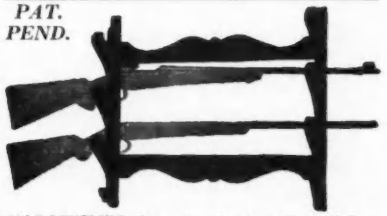

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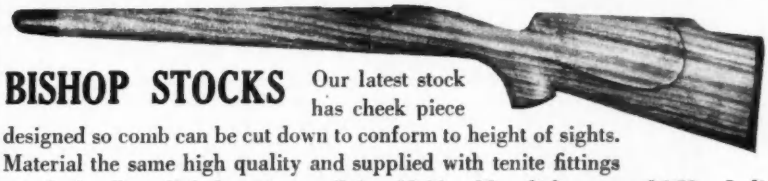

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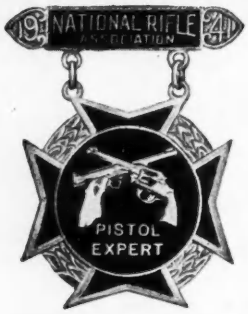

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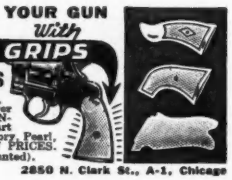

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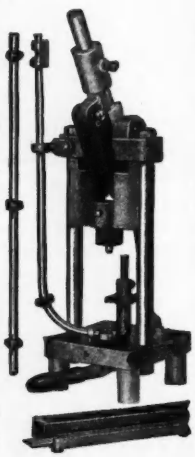

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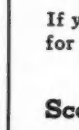

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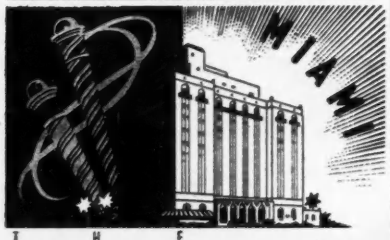

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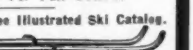

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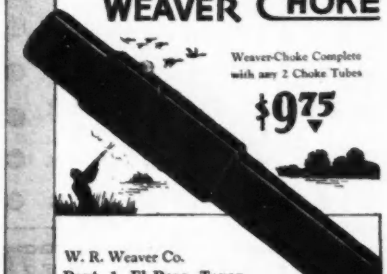

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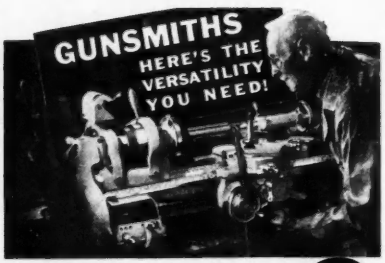

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SALE OF SURPLUS GOVERNMENT GOODS. Springfield Rifle Sling Straps, Brand New, $1.25; Leather Slings A-1 condition, 50¢; Springfield Sight Gauges, $1.00; 30-06 Empty Brass Cases, 75¢ per hundred; 30-06 F. A. Metal point cartridges, good condition, $4.00 per hundred; Complete illustrated catalog, send coin 25¢ to be deducted from the first order. Public Sport Shops, Dept. R-44, 13 S. 16th St., Philadelphia, Pa. 1-42

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FOR SALE—Deluxe Custom 30-06 Mauser Oborndort-Waffenfabric action, Anti Corri steel barrel, Condition like new, $125. WANT—Excellent or new Krag as issued, or 6.5 M.M. Mannlicher Schoenauer Carbine. Write. Elmer C. Breuer, 3616 Traynham Rd., Shaker Heights, Ohio. 1-42

.45 NEW SERVICE, Colt ivory stocks, $32.50; .455 S&W Triple Lock, $30.00; .45 S&W 1917, $20.00; .44 S&W Special, $22.50; Remington 37, $50.00; Clips for 1917 revolvers, 25 for $1.00. E. Thomson, 23 Pinckney, Greenville, S. C. 1-42

FOR SALE: Remington 31T. New Springfield NM. New Argus, Colt Ace. WANT—Parker DHE. C. E. Purdie, Faribault, Minn. 1-42

WANTED—Remington Model 141, 35 Cal., excellent. Receiver sight preferred. John Donaldson, Rainbow Inn, Park Rapids, Minn. 1-42

WANTED—Left hand 30-06 Winchester or Springfield, prefer with Scope. William Sack, Ord, Nebr. 1-42

GENUINE pearl, ivory and stag revolver grips, plain and carved. Send for price list. A. Frank Mittermeier, 3577 E. Tremont Ave., Bronx, N. Y. 1-42

TRADE 45 Colt Auto, very good, for 25 Auto. What have you? Roland Noyes, 21 Cabot St., Salem, Mass. 1-42

3 CENT STAMP for list of Guns, Tools, etc. P. N. Petersen, Albany, Wis. 1-42

FUR GAUNTLET Mittens, three pair, sheep lined, buckskin palm, $10.00. $3.50 pair. 29S Weaver, post reticule, T. mounts, perfect $11. WANT—330S Weaver. L. E. Jones, Black River Falls, Wis. 1-42

WANTED—9 mm Luger; Savage 99R; Marlin 39-A; .257 Remington; good condition. L. J. Brennan, 94 N. Transit Road, Lockport, N. Y. 1-42

WANTED—Will pay cash for .45 Automatic or .30 DWM Luger. F. P. Kaine, 68 Crandall St., Glen Falls, N. Y. 1-42

WANTED—Good small game scope; also 16 mm Cine Kodak. J. S. Vick, 79 Deerhurst Park Blvd., Buffalo, N. Y. 1-42

WANTED—B&L, Hensoldt or Zeiss binoculars; 6 to 8 power, 35 to 42 objective; must be good condition. J. M. Graham, 49 Marlboro Road, Allwood, Clifton, N. J. 1-42

WANTED—Ithaca 10 gauge Magnum chambered for 3½" cartridge, give full description, condition and price. E. W. Lodwick, 925 Summit St., Warren, Ohio. 1-42

FOR SALE—South Bend Milling attachment with two arbors for 9 inch Junior lathe, $18.00; Brown and Sharpe Inside Micrometers, #250, $10.00; #254, $10.00; Howes Modern Gunsmithing, $10.00; Leitz Valoy with Elmar f3.5, $50.00. Gilbert Twyman, 121 N. 36th St., Louisville, Ky. 1-42

ANTIQUE ARMS: New List describing 300 items ready for mailing. 15¢ please. Wm. Locke, 3607 Ault Park Rd., Cincinnati, Ohio. 1-42

WANTED—Fox 16 gauge shotgun, A. Grade, 26" barrels, preferably with ejectors and single trigger, 2⅝" drop, 13" stock, or gun that could be converted to these measurements. Roscoe Peacock, North Cohocton, New York. 1-42

WANTED—Cash for .30-06 or .270 Cal. Rifle; also 22 Colt's Woodsman. M. Ballard, Union, Oregon. 1-42

WANTED—Reloading Tools, Hornet, Swift, Lovell, prefer Pacific, components, cases. Woodsman, 25 Automatics. Scopes and Hornet mould. Leo Clark, Polo, Illinois. 1-42

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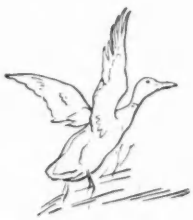

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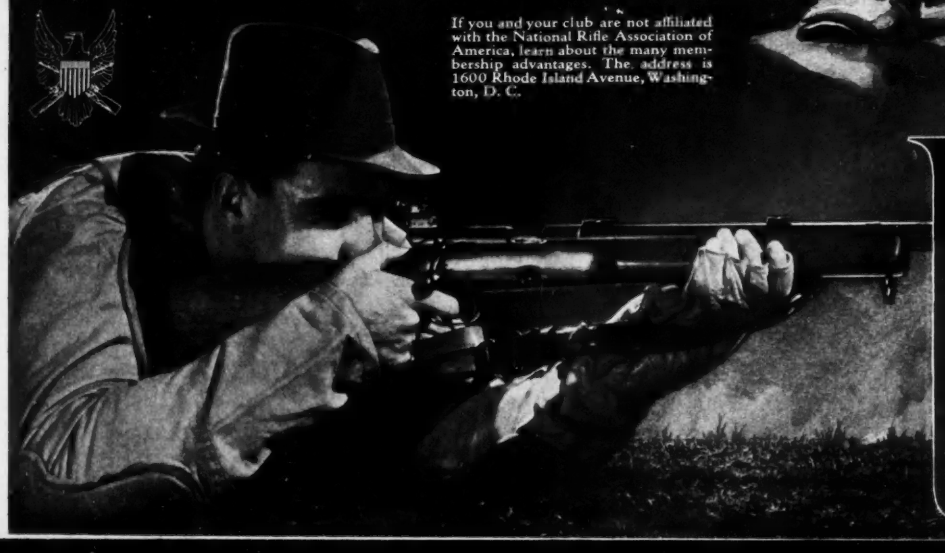

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